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Academic And Social Integration And The Moderating Effects Of Student Characteristics: A Study Of First-Generation Student Academic Performance

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ACADEMIC AND SOCIAL INTEGRATION AND THE MODERATING EFFECTS OF STUDENT CHARACTERISTICS: A STUDY OF FIRST-GENERATION STUDENT ACADEMIC PERFORMANCE

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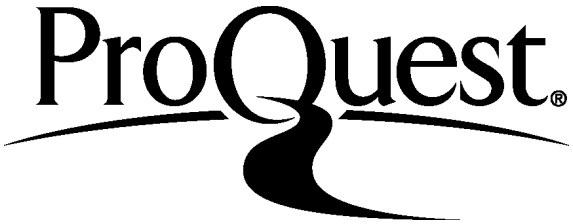

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ABSTRACT

This study investigated the relationship between academic and social integration on the academic performance of first-generation first-year students. Furthermore, this study examined if race, gender, or socioeconomic status moderate the relationship between academic and social integration and their academic performance. This study additionally developed a set of four academic and social integration profiles to investigate if there were differences among the profiles with respect to academic performance. Despite the recognition that first-generation students are at greater risk of academic failure than their peers, little attention has been given to what supports are most beneficial to particular subgroups of this population. Influenced by Abes, Jones, and McEwen's (2007) model of the multiple dimension of identity and using the framework of college impact models guided by the early work of Astin's (1977) input-environment-outcome model (1977), Pascarella's model for assessing change (1985), and Tinto's theory of student departure (1993), this study used students' self-identified demographics and perceptions of their social and academic integration to better understand what influences their academic success. This in turn allows for a more strategic allocation of resources for approaches that promote retention, persistence, and ultimately graduation for first-generation students entering higher education.

Archival data from MAP-Works survey (EBI, 2014) collected from 1,204 students in the fall 2013 were examined for patterns of influence on first-semester grade point average. Block-step multiple regression and *t* tests were used on the sample to discover multiple findings. The results confirmed academic preparation, socioeconomic status, financial stress, race, social

integration, and academic integration significantly influence academic performance. Academic and social integration scores were mapped on a matrix to create four profiles that further revealed the adverse impact of high social integration on academic performance particularly when considering gender. The results of this study support the need to consider complex student identities in program design and development, the urgency to engage students in early academic integration strategies, and the need to create strong collaborative partnerships to promote social integration strategies.

ACKNOWLEDGMENTS

There are two quotes that have been posted above my beloved writing space during this part of my higher education journey. The first was penned by Cynthia Occelli recognizing, "For a seed to achieve its greatest expression, it must come completely undone. The shell cracks, its insides come out, and everything changes. To someone who does not understand growth, it would look like complete destruction." The other was well articulated by Ernest Hemingway stating, "The first draft of anything is shit." Very little could describe this journey better prompting my gratitude to many people who have been part of my story.

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INTRODUCTION

Horace Mann (1848), the Secretary of the Massachusetts State Board of Education, stated "Education then, beyond all other devices of human origin, is a great equalizer of the conditions of men" (p. 669). Since this exclamation, access to higher education has expanded exponentially to include more than just the select group of privileged men Mann was referencing in that moment. President John F. Kennedy reiterated Mann's sentiment as he notably issued a proclamation for American Education Week in 1961 (Kennedy, 1961). This brought emphasis to the federal government's commitment to higher education on a national scale. President Barack Obama once again brought the importance of higher education under a national spotlight in his 2009 State of the Union Address by committing the resources necessary for young Americans to complete college (Obama, 2009). He stated, "By 2020, America will once again have the highest proportion of college graduated in the world" (para. 66). This gave evidence to the movement of higher education persistence and completion as a national movement.

The use of higher education as an equalizer has been evidenced through repeated measures since World War II, including the development of land grant schools, the GI Bill, and other student aid programs that led to increased higher education access well into the 1980s. This boom in access to education was partnered with the expectation that graduates could expect to move beyond the financial constraints of the previous generation in earning potential and

economic development. The Federal Reserve Bank of New York (Abel & Deitz, 2014) released a report noting that the value of a bachelor's degree is holding steady over the past decade worth nearly $300,000 for a current graduate. Much of this is attributed to the falling wages of high-school graduates despite college graduate wages holding stagnant.

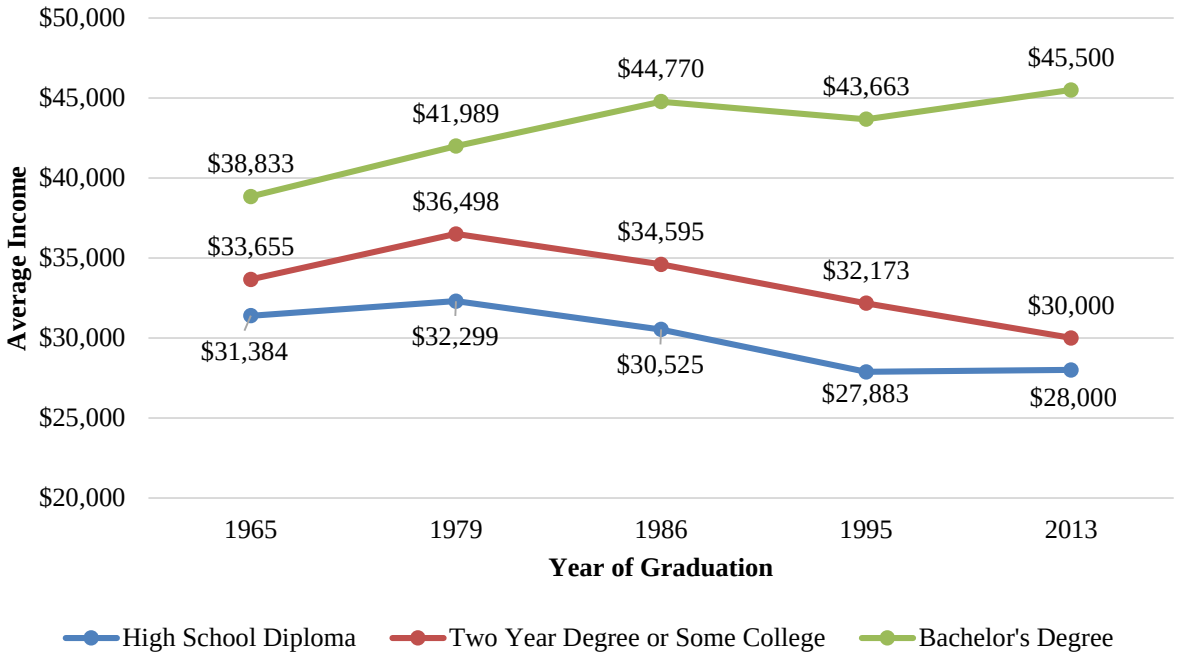

Figure 1. Tabulations of 1965, 1979, 1986, 1995, and 2013 income disparity survey. Adapted from Pew Research Center (2014).

The Pew Research Center (2014) gave evidence that current college graduates who are employed full-time have a higher earning capacity than their peers only completing a high school diploma. For example, those with only a high school graduation can expect to earn only 62% compared to a typical college graduate. This is a much larger pay gap than those in previous generations. The disparity in earning potential for those not attending, or completing, is continuing to widen with no evidence of a return pendulum swing.

Access and Completion

Despite evidence that higher education matters, the student persistence and completion rates in higher education institutions suggest that there is a gap between getting students enrolled and getting them across the finish line.

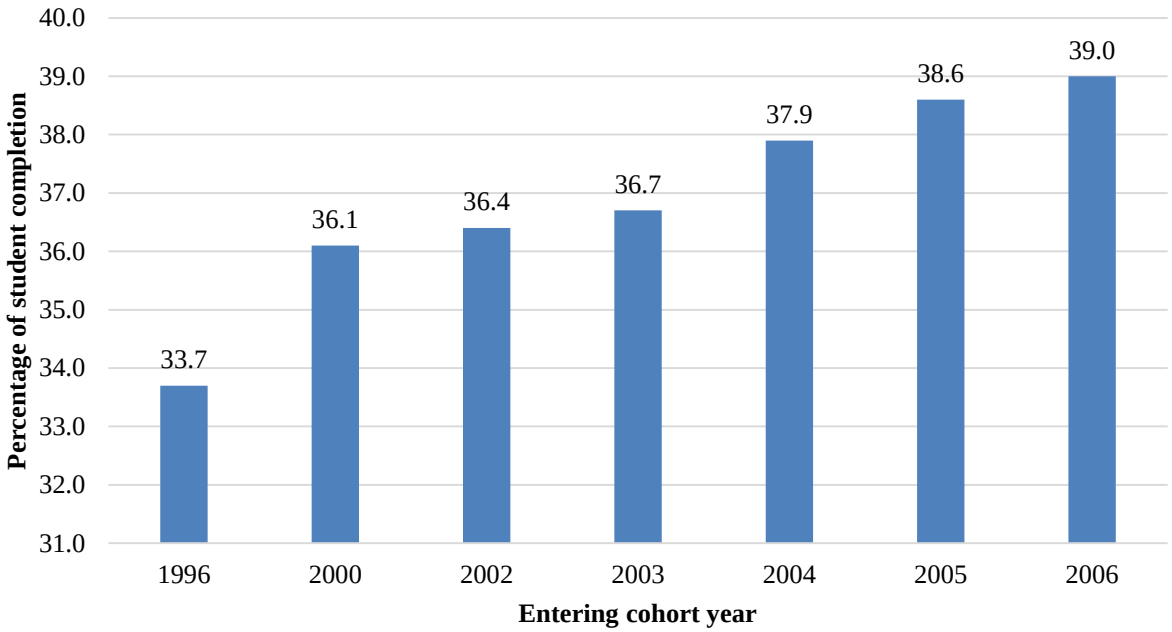

Figure 2. Six-year graduation rates by percent of first-time, full-time, bachelor's degree. Adapted from National Center for Education Statistics (NCES, 2014).

In the face of increased access to higher education, timely completion of a four-year degree continues to fall well below half of all those who enroll. From 1996 to 2006, only a marginal increase is demonstrated in degree completion for first-time students enrolled in both public and private institutions. This is even with a range of discussions and initiatives designed to address this very concern (NCES, 2014). Despite multiple resources allocated to support students once enrolled, the evidence suggests glacial progress is being made toward increased graduation rates.

Economic Impact for Institutions

Higher education systems are being charged with higher demands of accountability coupled with either stagnant or shrinking resources. In particular, legislative trends are reflecting higher accountability for funds tied to varied performance benchmarks including enrollment levels at the end of each semester, credit completion rates, and the number of degrees conferred (Miao, 2012). This brings careful consideration to programs and positions on campuses that are in place with the intention of supporting students' diverse needs, particularly for those students considered at risk, while promoting enrollment, retention, and timely persistence toward graduation. Initiatives unable to demonstrate a measureable positive value are subject to removal, sending the message of attention to the intention of each dollar invested. This leaves programs that support academic completion with the expectation of high impact for survival.

Furthermore, the failure to retain students, particularly those who do not re-enroll in their second year, cost higher education institutions nearly $9 billion between 2003 and 2008 and continues to escalate (American Institutes for Research, 2010). This added to the federal government's loss, and consequently the loss to higher education institutions, of nearly $1.5 billion in grants for eligible students result in a staggering price tag for taxpayers yielding no product (Siekpe & Barksdale, 2013). This loss of financial support particularly impacts students historically considered at risk.

Targeting First-Generation Students

Programs and activities for students have been created and implemented to target the broader category of at risk students with emphasis on those considered first generation. Federal initiatives such as TRIO that include Upward Bound, Talent Search, and Student Support Services as well as Gaining Early Awareness and Readiness for Undergraduate Programs

(GEAR UP) target students prior to college admission and once enrolled, providing intensive tutoring, mentoring, and college planning information (United States Department of Education, 2015). State initiatives such as California's Early Academic Outreach Program (EAOP), Indiana's Upward Bound, and Florida's Bridges to Success each include strong pillars of support particularly for first-generation students (Pell, 2015).

This is noteworthy considering that enrollment of first-generation students in college has tripled since 1955 to over three million, 39% between 2000 and 2012 alone. Projections indicate that this population's enrollment will continue to increase an additional 14% between 2010 and 2021 (NCES, 2012). These reports suggest first-generation students will continue to comprise a significant amount of the incoming student population. Understanding this population's needs in an effort to support their academic success is of paramount importance when seeking to increase retention, persistence, and timely graduation rates.

Though access to higher education continues to increase for first-generation students, these students are being given particular attention as an at risk population upon discovery that a disproportionate number are not persisting to graduation (NCES, 2012; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Somers, Woodhouse, & Cofer, 2004; Strayhorn, 2006).

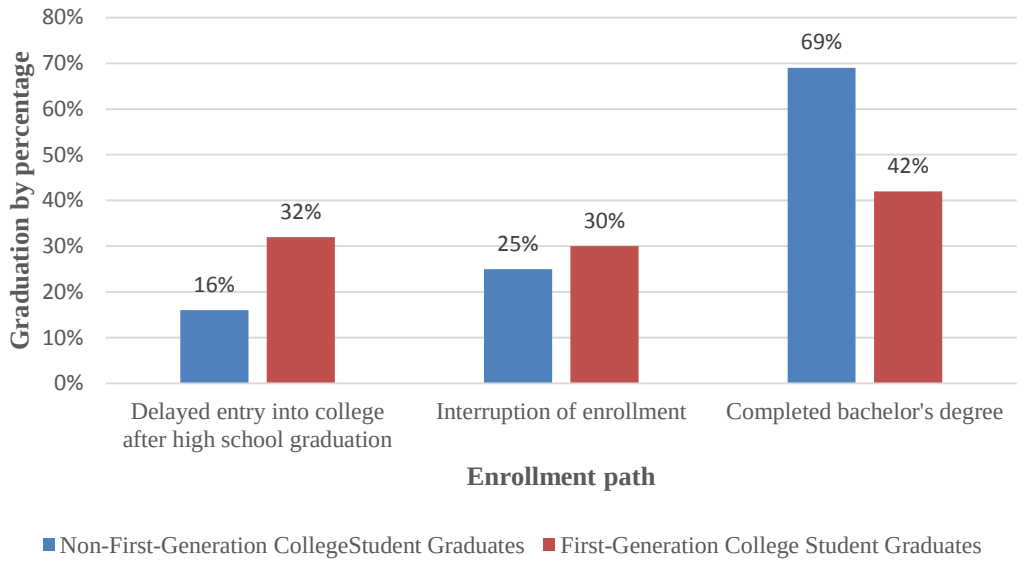

Figure 3. Percent of students who graduated by first and non-first generation status (Chapin Hall, 2012).

Chapin Hall (2012) followed the trajectory of first and non-first-generation students at four-year colleges discovering a marked difference in their completion rates. First-generation students who went directly into a higher education program after high school had a greater completion rate than those who delayed entrance and those whose higher education was interrupted, respectively. However, when compared to students who were not first-generation, these students completed their bachelor's degrees at a markedly lower rate.

DeAngelo, Franke, Hurtado, Pryor, and Tran (2011) gave additional support, noting that a nearly 14% point graduation rate difference is consistently demonstrated between first-generation students and their peers. This is most problematic at public universities, which enroll the majority of first-generation students (Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007). This suggests that although programs are in place to target first-generation students who have been historically considered at risk, the results are dismal at best.

Barriers to First-Generation Students' Graduation

Many first-generation students have high anticipation for college acceptance and success. Aspiring to be more educated than their parents, a greater number of students are striving to move forward in their education after high school. Students understand that higher education is a key factor to break out of the poverty cycle and are moving into college or vocational continuing studies. However, despite these efforts and a higher number of students who are demonstrating college readiness, many are not moving forward to achieve their higher education goals (American College Testing [ACT], 2013). A significant challenge for first-generation students continues to be an understanding of the admission process, how to secure financial aid once admitted, and how to navigate through higher-education experiences to be successful socially and academically.

Particular risk factors make first-generation students especially susceptible to attrition. Intersecting dynamics that include gender, age, race, external student obligations, financial needs and responsibilities, as well as students' varied levels of preparedness upon enrollment, and the experiences of students once enrolled must be considered when allocating institutional resources to promote student success (Calderon & Mathies, 2013). NCES (2012) specifically indicated race/ethnicity and gender have residual impact on the characteristics and experiences students will have once enrolled. Although a small difference between men (56%) and women (61%) who obtained bachelor degrees is evidenced, larger gaps are evident when considering race/ethnicity, and socioeconomic status.

In 2009, first-generation students who are Asian/Pacific Islander graduated at a 67% rate within five years at public institutions, closely compared to a rate of 62% for students who identified as first-generation White (NCES, 2012). A sharp decline in timely graduation

attainment is evidenced by students who identified as two or more races (50%), Hispanic (49%), Black (38%), or American Indian/Alaska Native (34%; NECS, 2012). Further, when combining the factors of race/ethnicity with gender, evidence was provided that Black men (39%), Hispanic men (30%), Black women (25%), and Hispanic women (20%) were unsuccessful in their attempts to earn a college degree, supporting the need to explore the complexities of student demographics (Bowen, Chingos, & McPherson, 2009).

Bowen, Chingos and McPherson (2009) brought to attention the challenges of students with low socioeconomic status, leaving them falling behind (68%) compared to high-socioeconomic students (83%). These factors combined leave a gaping disparity for low-socioeconomic minority students (59%) as opposed to high-socioeconomic students (77%). These intersections of subpopulations identified by race/ethnicity, gender, and socioeconomic status support early warnings by Tinto (1993) that a one-size-fits-all approach using first-generation college students as a single risk factor is shortsighted at best.

Multiple Identities

The recognition that students have multiple identities provides a framework to better understand the complex factors that influence students' academic successes. Using early research of personal development during one's lifespan (Erikson, 1968), demographic specific theories that explored race (e.g., Atkinson, 1989; Cross, 1971; Helms, 1984; Root, 1990) and gender (e.g., Collins, 2001; Downing & Roush, 1985), multiple identity models (Deux, 1993; Jones & McEwen, 2000; Reynolds & Pope, 1991) have evolved to allow exploration of how students use their identities to make meaning of their experiences at a given moment in time. Recognizing students' self-perceived identities gives insight to how belonging to a particular demographic

group may influence one's experience with academic or social integration, either positively or negatively.

The model of multiple dimensions of identity (Jones & McEwen, 2000) provided an initial framework that used a student's core sense of self, as identified by one's values and beliefs, to serve as the center of numerous intersecting elements including sexual orientation, culture, race, social class, religion, and gender. Each dimension is fluid and changing over a student's lifespan recognizing that the context of a particular experience is framed uniquely in different moments in time depending on a student's self-identity on each dimension. Abes and Jones (2004) further developed this framework to include the relationship of contextual influences (such as family influences and social norms), meaning-making structures that could impact internal or external expectations, and the understanding of one's own identity. This relationship between a student's experiential contexts, how one makes meaning of an experience, and how a student constructs his or her identity in a given moment allows researchers a deeper understanding of both what a student perceives and how it is perceived (Jones & McEwen, 2000). This supports the need to consider multiple identity factors in a given moment of time when exploring students' experiences that influence success.

Academic Performance and Integration

Findings suggest that even when controlling for demographic backgrounds, academic preparation, and enrollment characteristics, first-generation students have a wider gap of higher education access and success than their peers (Berkner & Chavez, 1997; Chen & Carroll, 2005; Choy, 2001; Horn & Nunez, 2000; Ishitani, 2003). Expansion of this literature has given particular attention to the experiences of first-generation students once enrolled to consider how this impacted their graduation success (e.g., Pascarella et al., 2004; Ramos-Sanchez & Nichols,

2007). Experiences of students include their engagement in academic as well as the social engagement that have a direct impact on academic success.

Pascarella et al. (2004) explored the experiences of first-generation students once enrolled that differed from their peers. Findings indicate that although first-generation students were involved in fewer formal and informal activities, their involvement has a greater impact on science reasoning, writing skills, and educational degree plans than for their peers. Conversely, first-generation students who had activities outside of the college arena were more negatively impacted by this time invested elsewhere than their peers. This was particularly notable for those in their second and third years of study. This indicates a need for institutions to strive for student engagement within the campus setting.

The most important factor in the determination of student success may be the student experience within the institution (Tinto, 1987, 1993). Tinto noted that separation from non-academic communities, and transition between school and home communities, as well as academic and social community incorporation will best explain student success. Students who have articulated expectations from the higher education institution, their opportunities for extra-curricular engagement, themselves, and their instructors will be more likely to accurately report if their needs are being met.

Student needs being met may impact engagement in the academic process, personal development experience, and ultimately completion of a higher education degree in a timely manner. To only look at those who are successful by institutional measurements in correlation with the programs in which those students are engaged may overlook the student component of responsibility in the educational process. This supports the importance of students' self-perceptions of academic and social integration.

Seidman (2012) clearly and repeatedly supported student involvement as the pivotal factor for student success in higher education institutions regardless of size, type, or mission statement focus. Heavily relying on early social theories studies including Allen and Nelson (1989) and Cabrera, Nora, and Castaneda (1992), the encouragement of social and academic relationships is consistently linked to greater student retention and graduation successes. As the evaluation of relationships is one of personal perception, the use of students' perspectives of their successes to integrate socially and academically is of paramount importance.

Statement of the Problem

The importance of higher education has been given attention throughout history; however, despite the increase in access, minimal progress is being made toward persistence and timely completion, particularly among first-generation students. State policies designed to better support first-generation students focus heavily on access and little on the experiences of students once enrolled. Furthermore, policies that penalize institutions for lack of completion, most often found correlated with at risk students, may be causing more harm than good. The challenges for at risk students, particularly first-generation students, are complex. Despite extensive literature that examines student retention, student engagement, and student performance, little has reflected a multifaceted model that considers the moderating factors that have an impact on student academic success, and by extension, nuanced insight on what it means to be first-generation. Recognizing that students identify themselves at a given moment in time using demographic factors of identity, including race, gender, and socioeconomic status, which influence their perceptions of integration, this study considered if these demographic identity factors strengthen or weaken a relationship to academic success.

Purpose of Study

The purpose of this study was to investigate the relationship between academic and social integration on the academic performance of first-generation freshmen students. Furthermore, the study is unique as it sought to investigate if demographics self-identified by students as part of their identity including gender, race, and socioeconomic status moderate the relationship between academic and social integration and the academic performance of first-generation freshmen students. Furthermore, it enables future qualitative inquiry to examine in depth how the intersections of students' identity combined with meaning-making capacity influence students' accomplishments. Finally, the study sought to develop a set of four academic and social integration profiles to investigate if there are differences among the profiles with respect to academic performance. This collective research will serve to inform practice and policy at the institutional, state, and federal levels in providing new insights for optimal resource investments that support the success of first-generation students.

The specific research questions were as follows:

1. What effect does academic and social integration have on first semester grade point averages of first-generation students?
2. Do (a) gender, (b) race/ethnicity, and (c) socioeconomic status moderate the relationship between academic and social integration and grade point averages of first-generation students?
3. Is there a difference in first semester grade point averages of first-generation students based on academic and social integration profiles?

Significance of Study

Although first-generation students are recognized as at risk and potentially in need of additional supports once enrolled in higher education, little attention has been given to what supports are most beneficial to particular subgroups of this population. Too frequently first-generation students are considered a single classification based on parent higher education experience, without attention to the cultural identity factors that impact their academic success. Determining students' integration patterns based on specific self-identified demographic classifications as it may affect grade point average supported a more focused understanding on what experiences have the greatest influence on academic success. This in turn allows a more strategic allocation of resources for social and academic approaches and supports that promote retention, persistence, and ultimately graduation.

Summary

This chapter identified that education is established as an intended equalizer among citizens with a history of state and federal supports to promote access. It was demonstrated that access to education does not guarantee completion, particularly for students considered at risk resulting in an economic impact for institutions, taxpayers, and students. As higher education institutions are facing an increase in student enrollment, persistence, and graduation accountability, which is linked to financial allocations, the need to support students is growing exponentially. A particular at risk population includes first-generation students whose needs are varied depending on moderating variables. Understanding the integration experiences of first-generation students, with consideration to the demographics that make them complex and unique, will better allow for strategic resource allocation that promotes academic success. The research questions that guided this inquiry were presented as well as the significance of this

study.

Chapter 2 will present the literature that informs this study. Chapter 3 will discuss the methodology used to conduct this study. Chapter 4 will present the findings, and Chapter 5 will discuss the findings, the implications for practice, study limitations, and opportunities for future research.

CHAPTER 2

LITERATURE REVIEW

As access to higher education continues to increase for first-generation students, attention is being given to these students' persistence to graduation (NCES, 2012; Pascarella et al., 2004; Somers et al., 2004; Strayhorn, 2006). Factors such as understanding the admissions process, navigating financial aid, and higher education experiences, socially and academically, are considered to have an impact on academic performance and in turn, retention, persistence, and graduation rates. Student demographics and varied preparation upon enrollment create a labyrinth of intersecting dynamics that influence students' academic success. Exploring the moderating factors that are linked with integration can help provide evidence of the supports necessary to promote academic success of first-generation students. How colleges impact students' academic success specific to multiple student identities of first-year, first-generation students as linked to their perceptions of integration will provide insights for optimal resource investment by the institution.

To contextualize and position this research, this literature review is organized into the following sections. First, theoretical models of college impact will be explained to provide a framework to explore the interactions of students and institutional environments as it impacts student success. Second, the operationalization of integration will be explained to frame how integration will be measured in this study. Third, evidence of the link between integration and

academic performance will be provided. Finally, a consideration of complex student identities will be introduced with emphasis on key factors relative to this study.

College Impact Models

Within the higher education literature, college student change can be classified into two broad categories. First, developmental models focus on specific changes within students, also referenced as intra-individual change. Developmental theories generally describe the processes that define human growth. This classification of theories is dominated by stage theories, which suggest students move through a hierarchical sequence of development.

Second, college impact models encompass environmental and inter-individual origins of student change (Pascarella & Terenzini, 2005). Inter-individual origins of student change consider the source of change that influences student development. The use of college impact models moves the focus from "what" is changing in students' development into a broader understanding of "how" the changes come into play based on sources of influence. Impact models also recognize that variables may be student related, organizational in nature, or environmental (Terenzini, 1987). Rather than focusing on specific individual processes of student change, impact models focus on the origins and processes of change itself while students are enrolled in college. Astin's (1970, 1991) input–environment–outcome model, Pascarella's (1980, 1985) college impact model, and Tinto's (1975, 1982, 1993) model of student attrition, each provided significant contributions to the study of the multifaceted influence of student enrollment, persistence, academic performance, and timely graduation.

Astin's Input–Environment–Outcome Model

A specific impact model of change in college students established by Astin (1970, 1991) offers a construct of student change that gives emphasis to a student's development, with

consideration to the origins and processes of change, using an input–environment–outcome (I–E–O) flow as a conceptual guide. Using three sets of elements, the Astin model (Figure 4) is used as a conceptual and methodological guide to examine the impact of college experiences. This model recognizes not only the influences of characteristics that students bring to college but the impact of the environment and the processes between these interactions on student outcomes as well.

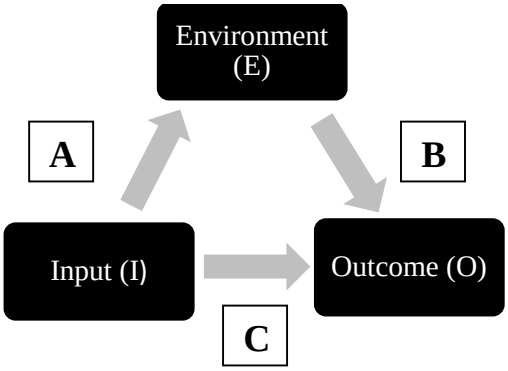

Figure 4. Astin's I– E–O Model (2012). Used with permission.

Astin identified inputs (I) as a student's experiences and background. Considering that any measurable outcome might be influenced by factors a student is exposed to prior to his or her experiences, student inputs are identified as preexisting characteristics (Astin, 1977). Those factors that have been historically identified to influence higher education performance, such as academic preparation and class ranking, are identified as inputs in an effort to control for variances in outcomes. Inputs can be further considered as performance indicators such as GRE or SAT test results or demographic factors, such as race/ethnicity, socioeconomic status, and gender identity.

Environmental influences (E) are the particular types of experiences that students are exposed to during their higher educational enrollment (Astin, 1977). Here what is meant is the

consideration of formal and informal experiences during a student's academic career that may have varying degrees of impact on the identified outcome. When input controls for predetermined features, the outcome may best reflect the significance of particular experiences for specifically identified groups of students.

The outcomes (O) are identified as the student's knowledge, attitude, and beliefs after being exposed to the higher education environment. This concept recognizes that outcome measures are complex and the degree of an institution's impact is influenced by the previous experiences and background of each student. A taxonomy of student outcomes using type of outcome (affective and cognitive), type of data (psychological or behavioral), and time (during college or after college) guides outcome measures (Astin, 1970). This taxonomy has been utilized in parallel research by others (Pascarella & Terenzini, 1991).

The approach that Astin (1970) posited is that student inputs directly impact outcomes (C) as well as indirectly when they interface with the environment (A) and (B). Using this approach gives administrators and those shaping policy a mechanism to explain the impact of environmental influences over which there is presumably some control. It also recognizes that students are the first origin of change, and further development depends on the degree to which one chooses to become involved in formal and informal learning opportunities with others.

As a student interfaces with his/her environment, Astin (1985) argued that this involvement works to explain the interactive dynamics of student development. Astin asserted that his theory "can be stated simply, *students learn by becoming involved"* (p. 133). Using five basic assumptions, Astin suggested,

> a) involvement requires psychological and physical energy in objects of one sort or another such as tasks, people, or activities; b) involvement is a continuous concept;

> different students will invest varied energy in different objects; c) involvement is both qualitative and quantitative; d) the amount of learning or development is directly proportional to the quality and quantity of involvement; and e) educational effectiveness of any policy or practice is related to its capacity to induce involvement in students. (pp. 135-136)

Astin's theory of student involvement recognizes that change is not simply a function of a student's interaction with the environment, but a result of the quality of involvement in these interactions.

Astin (2012) regarded outcomes as the most important category of this model for researchers. Serving as the dependent variables of studies, he noted that outcomes "reflect the desired aims and objectives of the educational program" (p. 41) and require value-based judgements. Additionally, he noted outcomes are indicative in this model of having been influenced by student inputs and experiences.

Outcomes can be measured as cognitive, based on knowledge, or affective, based on values. Learning productivity, which presumes that institutions affect student learning, is the most common cognitive outcome measured, as exemplified by Hu and Kuh (2003). Their study used undergraduates from four-year colleges and provided evidence that students investing similar efforts in similar activities at different institutions made different amounts of progress toward college outcomes. The study also noted that the emphasis on particular programs or social engagements positively influenced student gains in that area on different campuses. Finally, student engagement in targeted educational activities had a positive effect on student self-reported gains.

Student input is paramount to the discussion of the I-E-O model as inputs are always related to outcomes and inputs are consistently related to environments (Astin, 2012). The Cooperative Institutional Research Program (CIRP) surveys have been monitoring the values of incoming freshman for over 40 years and provide data on a wide variety of student outcomes, a primary application example of the I–E–O model (Higher Education Research Institute, 2015). The most common measures of student input data include pre- and post-tests, student predictions or expectations, and those that study the possible interactions between student input and environmental characteristics (Astin, 2012). Additionally, areas of institutional functioning such as admissions and recruitment, advising and early warning systems, curriculum and program evaluation, and public information can be valuable for the information they provide about the institution as well as for administrative planning purposes.

In the broadest sense, what happens to a student during the course of an educational program can be considered part of the institutional environment. Two particular types of measures can be engaged when considering environment including characteristics of the total institution to which all students are potentially exposed (between institution measures), and particular educational experiences within the institutions that only some students experience (within institution measures; Astin, 2012). Both serve to understand the impact of the environment on student outcomes.

Between-institution measures generally refer to structural characteristics of institutions such as size, selectivity, tuition charges, highest level of degree offered, and other similar factors that allow for a contrast of effects between different institutions. NCES documents such characteristics. The Integrated Postsecondary Education Data System (IPEDS), which serves as a sub-section of NCES, currently provides data from multiple surveys that can distinguish selected

characteristics and time periods. Resources such as the Race/Ethnicity Information Center, the Academic Libraries Survey, and the Survey Instrument Archive are included in IPEDS.

The use of within-institution measures allows for an understanding of a smaller segment of the impact of the environment on student outcomes. Ahmad, Anantharaman, and Ismail (2012) selected a within-institution measure using Astin's I–E–O model to extract evidence that student motivation, perceived environment, and student involvement influenced professional commitment particular to an accounting academic program. This provided support for the inclusion of reciprocal positive student and faculty engagement to promote positive student institutional commitment.

Astin's I-E-O model is widely accepted and utilized in formulating the consideration of a longitudinal approach to evaluating the impact of students' characteristics and experiences entering college, the environment that impacts students once enrolled, and measurable outcomes. Broad in scope, Astin's model allows for a systemic approach to exploring the micro, mezzo, and macro layers of higher education. While appearing as a simple model, the multiple layers of consideration in each facet of the model, and the complexities of the interactions, must be thoroughly considered to understand the intersections of dynamics that lend to an understanding of student, institutional, and higher education performance and success.

Pascarella's Model for Assessing Change

In 1957, Philip Jacob released what gained notoriety as the "Jacob Report," which was one of the first scholarly products to consider what impacts institutions were having on students and their development (Pascarella, 1985). This released a flurry of professional work from multiple disciplines to examine the ways colleges influence students' values, attitudes, personalities, political views, incomes, and other factors. Pascarella (1985) took note that only a

small fraction of the research gave attention to learning and cognitive development. Recognizing that "enhancing student learning and cognitive development is clearly central to the mission of the university" (p. 2), Pascarella strove to develop a model to guide future inquiry.

To better include consideration of an institution's characteristics and its environment as it impacts student success, Pascarella (1980, 1985) built on a subset of the work of Astin (1973) to focus on learning and cognitive development student outcomes. Astin proposed that college outcomes can be defined on three dimensions: type of outcome, type of data, and time span. Type of outcome and data could each be classified on a dichotomous matrix, cognitive, affective, psychological, and behavioral. Time span can be used as a continuous variable,

Cognitive outcomes are most closely aligned with educational objectives of learning, persistence, and graduation serving as a focus for students, administrators, and others invested in the institutional system (Astin, 1973).These outcomes tend to use higher-order skills such as knowledge comprehension, critical thinking, and problem solving. Affective outcomes, the more widely explored set of outcomes in early research, are concerned with interpersonal relationships, students' attitudes, values, self-concepts, and other self-identity variables (Feldman & Newcomb, 1969). Using Astin's (1973) matrix, psychological and behavioral data can also be collected. Psychological data are the internal traits self-identified by students and often indirectly assessed by others based on responses to a survey, quiz, or similar question and answer method. Conversely, behavioral measures are the measurable observations of a person in his/her environment.

The intersecting approach by Astin (1973) provided four types of student outcomes to consider; (a) cognitive-psychological, (b) cognitive-behavioral, (c) affective-psychological, and (d) affective-behavioral. Pascarella (1985) used the cognitive-psychological block of Astin's

work to guide his proposal that recognizes the direct and indirect impact of institutions while considering students' pre-existing characteristics on their growth and development. This work evolved during a similar time period in which Tinto (1975, 1987) explored student attrition; however, Pascarella's focus was on the influence of the institution on students' cognitive learning as an outcome versus why students leave an institution.

In an effort to better understand the dynamics of college impact on learning and cognitive development, Pascarella (1985) proposed a causal model as a methodological approach. This work was based on the early research of Feldman (1971), Lacy (1978), Pace (1979), Pascarella (1980), Walberg (1982), and Walberg, Pascarella, Haertel, and Junker (1982). Causal path analysis allows for multiple theories to intersect in multiple environments using ordinal and interval level data when available to best explain the variation in higher education processes that influence outcomes (Feldman). Pascarella (1985) noted about the college impact model, "It is not intended to be prescriptive. Rather, its estimation should be expected to lead to more refined and accurate alternative models which better explain the causal structure in different contexts" (p. 49).

As seen in Figure 5, Pascarella's (1985) causal model is impacted by a web of five primary blocks of variables; (a) students' precollege traits, (b) the institution's organizational characteristics, (c) the campus culture, (d) socializing agents on campus, and (e) the quality of effort put forth by students. While each variable warrants consideration, some have direct, others indirect, influence on student outcomes. The details of each variable are dependent on the institution, the student, and the interactions that occur in presented opportunities.

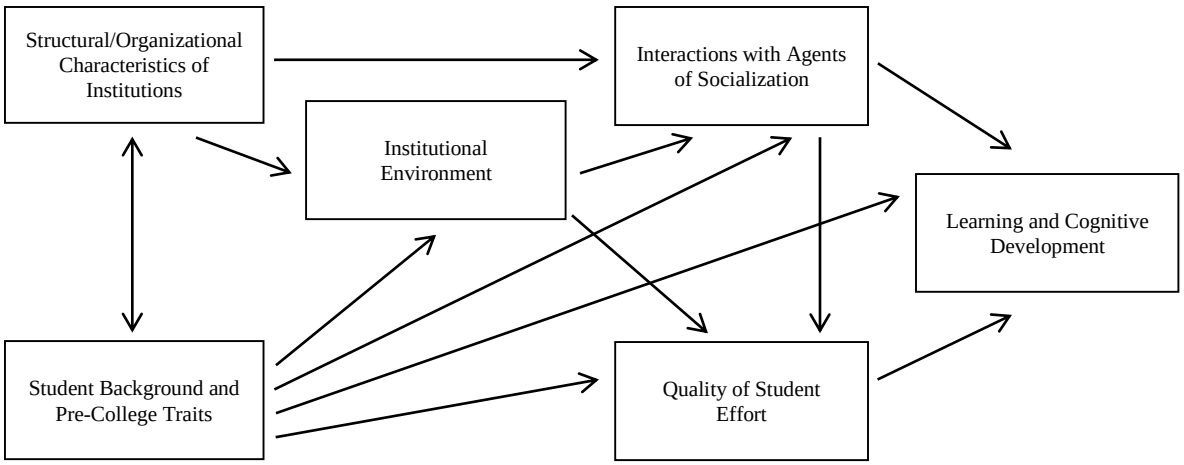

Figure 5. The college impact model – five factors of influence on student change (Pascarella, 1985, p.10). Used with permission.

Pre-college traits including demographics and preparation influence student experiences and needs as well as the campus culture. Traits have historically included gender, ethnicity, age, high school preparation, academic motivation, cognitive development, student self-understanding and pre-college educational plans (Pascarella et al., 2004). Institutional characteristics include factors such as size, selectivity, levels of degrees and programs offered, as well as application information, student services, and accreditation (NCES, 2014). Pascarella (1985) noted that the path that connects students' backgrounds and precollege traits with structural and organizational characteristics is considered non-causal as students do not influence campus size, for example. However, there is likely an indirect connection between students' traits and the types of institutions they select. The institutional characteristics and environment also captures campus culture which is broadly defined as the combination of the material,

institutional, and spiritual cultures that are collaboratively created over an extended period of time with influence of the students (Shen & Tian, 2012).

Students' background traits and characteristics, the institution, and the institutional environment have the ability to influence the quantity and quality of students' interactions with major socializing agents on campus (Pascarella, 1985). This may include formal or informal interactions with faculty, staff, and peers as well as with instruction and campus environments such as classroom learning, service learning, cultural events, athletic events, and others. This combination of influences is most often seen as a direct link. Here the quality of students' efforts is seen to be directly influenced not only by the background traits and experiences they bring to campus, but by the cultures that are woven into the campus environment.

Pascarella (1980) conducted a critical review of the early research literature and concluded that with student pre-enrollment characteristics held constant, there were positive correlations between the quantity and the quality of student-faculty contact and students' educational aspirations, institutional commitment, academic achievement, personal development and persistence. He noted that informal interactions had the greatest impact, particularly for students who entered institutions with characteristics that predicted high risk of withdrawal. This outcome may be dependent on the initial engagement between the student and faculty in a formal classroom setting being positive (which he suggests may be reciprocal), leading students to seek out additional informal contact.

Finally, engagement in learning and cognitive development, both academically and socially, is posited to be an outcome influenced by students' background traits, and interactions with others, and the quality of effort invested by the students (Pascarella, 1985). Lacy (1978) provided early influence also using a causal approach to demonstrate that student characteristics

impacted college selection and influenced how the college environment was shaped over time. This in turn influenced the quality of student interaction with faculty and peers. These socialization patters were linked to the formation of students' outcomes, measured in this study as attitudes and values. Pace (1979) argued that student effort is a strong factor of influence as the institutional environment and interactions with others can only set the stage of opportunity. He notes that it is ultimately the quantity and quality of student efforts that can directly impact outcomes, particularly those which are measured as learning and cognitive.

Tinto's Theory of Student Departure

During a similar time period as Pascarella's work, Tinto (1975) proposed a student departure theory to explain the college withdrawal process based on institutional fit (Figure 6). Tinto (1975, 1987, 1993) introduced an interactionalist theory from a sociological perspective, which suggested that students enter an institution with attributes that influence their goals and institutional commitments. He further noted students must undergo a transition of separating from a group with whom they were formerly associated such as family and high school peers, and engage in a time of assimilation into a new group. Students eventually incorporate into a new group by adopting normative behaviors and values.

This interaction between students and the institutional environment is organized around the concepts of academic and social integration as complementary but distinctly separate processes. As a dominant sociological perspective, Tinto (1975) argued that greater levels of academic and social integration will lead students to experience success in college. This links to institutional experiences in both the academic and social systems that lead to academic and social integration. This in turns has the ability to reshape students' goals and institutional commitments, and ultimately student outcomes.

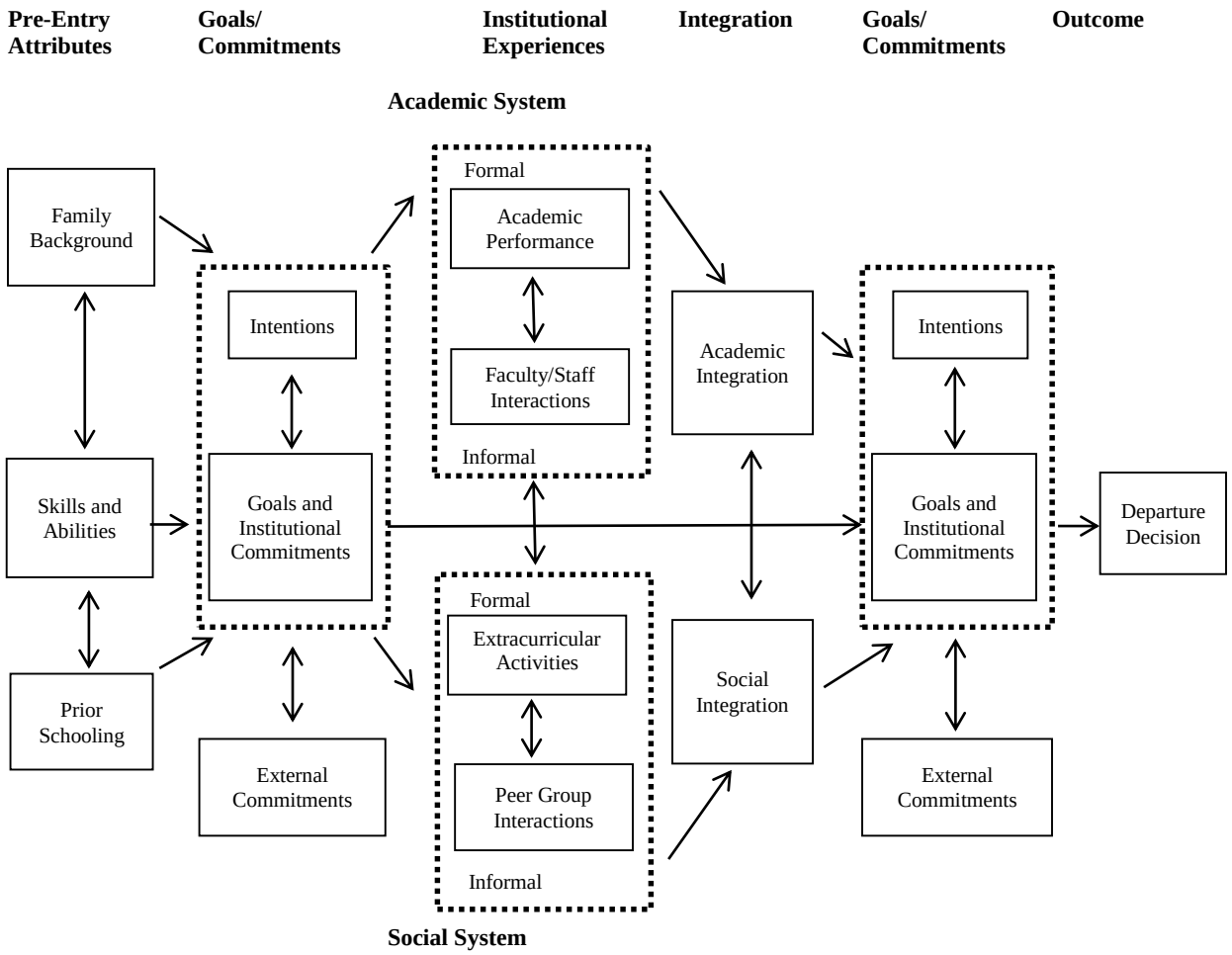

Figure 6. A longitudinal model of institutional departure (Tinto, 1993, p. 114). Used with permission.

According to Tinto (1975), "given individual characteristics, prior experiences, and commitments, it is the individual's integration into the academic and social systems of the college that most directly related to his [or her] continuance in that college" (p. 96). Characteristics including gender, race/ethnicity, religion/spirituality, abilities, socioeconomic status, as well as family backgrounds and prior educational experiences shape who a student is

upon admission. These attributes influence how students interact with the college environments, but more importantly, these factors influence students' expectations and motivations for additional education (Tinto, 1973).

Tinto (1973) theorized that the unique combinations of characteristics that students bring with them to college are combined with their intentions and commitments to the institution. Referred to as goal commitment, the intention to complete college and institutional commitment, the latter being a desire to be at a particular institution, are both needed as part of the acclimation process to predict personal experiences and satisfaction while in the college environment. Tinto (1973) posited that the "higher the level of an individual's commitment to the goal of college completion, the lower the likelihood that an individual will drop out of college" (p. 41). Cabrera, Castaneda, Nora, and Hengstler (1992) concurred that the greater level of goal and institutional commitment on behalf of the student, the greater the likelihood for persistence.

Academic and social experiences, both formal and informal,contribute to the degree of academic and social integration a student experiences. These experiences can be normative or formal in academic and social settings. Students who are exposed to experiences either structured by the institutions, such as work or cultural events, or those that happen naturally, such as residence hall common-room discussions or after-class faculty interactions, may report higher levels of integration. Measures of experiences can be classified into domains such as; (a) characteristics and characterizations of the environment, (b) the quality of interactions, (c) membership based on privleges confirred to one who is considered part of the group, and (d) perceived social cohesion (Hurtado, 2008). Tinto (1993) reiterated that positive and integrative experiences reinforce persistence through increased commitment to the goal of completion and to

the institution. Negative experiences, on the other hand, serve to weaken completion and instititutional commitment, increasing the liklihood of a student's departure.

Tinto (1975) hypothesized that the degree of integration experienced by a student leads to new levels of goal and institutional commitment. Specifically, students with higher degrees of integration will have greater institutional and goal completion commitment and are less likely to drop out. Tinto did suggest that a sufficiently high commitment to goal completion, even with low levels of academic and social integration, may result in students remaining enrolled or transferring to another institution. Similarly, those with high levels of commitment to an institution, but low levels of comittment to goal completion, are also more likely to remain enrolled though not academically productive. The institutional and goal commitment of a student, as influenced by academic and social integration, combined with prior student experiences and characteristics upon enrollment, shape a student's decision to persist or withdraw.

Recognizing that Tinto's model was giving strong consideration to the impact of the institution and its members on student behaviors, Pascarella and Terenzini (1978, 1979, 1980) explored Tinto's theory of college attrition and found particular support for student-reported relationships to explain attrition. While pre-college traits were found to be least important to persistence, interaction and integration explain the largest proportion of variance (Pascarella & Terenzini, 1978). Furthermore,academic integration explained the greater amount of variance in student attrition compared to social integration. Students reported informal interactions with faculty members as the greatest contributing factor to persistence.

Additional research by Pascarella and Terenzini (1979) explored social and academic integration and effects of student characteristics. They found an interaction between student and

academic faculty relationship variables which were classified as a measure of social integration and academic faculty concern for student development learning as a measure of academic integration. They posited that the perceptions by students of positive integration with faculty, both socially and academically, was a positive influence on persistence of freshman who entered with characteristics historically predictive of withdrawal.

To better understand how integration influenced students' persistence decisions with specific populations, Pascarella and Terenzini (1980) tested for the predictive validity of the primary dimensions of Tinto's model between freshman students who persisted and those who voluntarily dropped out while controlling for freshman-year grade point average and extent of involvement in extra-curricular activities. Student-faculty relationships and faculty concern for student development were shown as especially positive influences on student retention. Gender-based differences also surfaced, suggesting that social integration had a more influential role in persistence for women than men, and mens' levels of institutional and goal commitments were a stronger factor in persistence than for women.

Hurtado and Carter (1997) further advanced Tinto's theory of integration using the concept of membership. They believed membership "is intended to capture the multiple communities on campus and students' multiple affiliations without adopting a single or predominant set of norms" (p. 327). Their research found that membership allowed students to engage in multiple peer groups that helped them to acquire the skills needed in to be successful in college. The impact of belonging on academic performance was inconclusive as this study did not discern between student learning and conformity, particularly for historically underrepresented student populations.

Similar results were found by Liu and Liu (1999) when applying Tinto's model at a commuter campus. They reported race and socioeconomic factors as indicators of differences in retention rates. They found Hispanic students' rates of graduation outpaced those of African American students, though both still lagged behind White students. Concern that race must be examined within thr specific context of student–faculty relationship was discussed.

Elkins, Braxton, and James (2000) explored first-semester persistence of first-time, full-time freshmen at a public four-year institution focusing on Tinto's concept of separation. They found the support of students' previous communities can provide encouragement and reinforce students' decisions to enroll in college. Specifically, women and students who are White are more likely to receive support for their postsecondary attendance than male students or those from historically underrepresented populations. They additionally found that as parental income rises and the greater one's record of high school academic achievement, the greater the support experienced. Finally, Elkins et al. reported that students who are less likely to perceive the need to reject past values and experiences in an effort to assimilate are less likely to drop out.

Criticism of Tinto's model. Tinto's model has historically faced criticism including the disagreement on how to define and best measure integration and what impact it truly has on departure (Braxton, 2000). As Tinto's work evolved from Durkheim's suicide theory, objectively seen as more severe than leaving college, the translation to student attrition may not be appropriate (Attinasi, 1989). Giving early acknowledgement to the myriad of factors that influence students' institutional and goal commitments, Tinto (1975) noted the need for studies "to isolate independent effects of various factors on college dropout" (p. 44). Tinto (1993) has since clarified in his subsequent research that his is "not a system of departure" (p. 112) but a model to consider the longitudinal process of student development.

Additionally, criticism has surfaced of the model's applicability to historically underrepresented racial and ethnic groups. Nora and Cabrera (1996) reported that minority students report a higher sense of discrimination and prejudice on campus than White students, and these perceptions impact adjustment to college and outcomes such as academic performance. Tierney (1992) argued that Tinto misinterpreted Van Gennep's anthropological rites of passage. Van Gennep suggested that students must alter their values to successfully integrate into an institutional culture, something that Tinto (1993) felt may have "harmful consequences for racial and ethnic minorities" (p. 603). Tinto acknowledged these early research limitations and subsequently included previously excluded student populations (Tinto, 1982, 1987, 1993).

Finally, institutional type is considered a criticism as well since community college students are presumed to have fewer opportunities for integration due to being predominantly commuter settings. Additionally, Tinto's model considers student departure as a negative behavior even though moving from a two-year institution to a four-year institution may be viewed as positive. Studies using this population have found inconsistencies with Tinto's model with only academic integration as having any impact (Allen, 1986; Pascarella, Duby, Miller, & Rasher, 1981). Pascarella, Duby, and Iverson (1983) suggested that social integration may have a negative impact on persistence. Ross (1992) further indicated that academic and social integration on students enrolled at two-year institutions depended on academic preparation with those being more highly prepared having higher self-reports of integration.

The focus on student performance was preceded by concerns regarding student retention. This line of research included academic preparation and transition into college (Brothen & Wambach, 2004). Scholarly inquiry predominantly included quantitative studies focusing on residential four-year institutions and White students (Tinto, 1993). Tinto (1993) suggested that a

lack of academic and social preparation was largely blamed on the student, something that some have suggested creates a framework of victimization.

Other critiques of Tinto's model have suggested that it was vague with concepts difficult to measure (Braxton, Sullivan, & Johnson, 1997) and limited in scope to value student diversity (McCubbin, 2003; Metz, 2002; Tierney, 1992) and has moved research to student attrition including risk factors and prevention strategies (Berger & Lyon, 2005; Tinto, 1975). As a result, a growing emphasis has been placed on the characteristics of students who had dropped out and how to predict this behavior proactively. This opened the opportunity to develop a conceptual framework that includes student characteristics connected to academic performance, peer support, and social integration that prompted discussion of institutional commitment and satisfaction (Spady, 1971). A more focused movement began to take form with research emphasizing the interactions of student characteristics, their campus environment, and persistence specific to academic performance. The use of grade point average is a common measure used to evaluate student performance and academic success (Pascarella & Terenzini, 2005; Seidman, 2005; Tinto, 1987).

Academic integration. Tinto (1993) defined two distinct categories of integration, academic and social. Academic integration is most commonly measured by a student's academic performance and ability to identify with the standards of the academic system. Academic performance provides the progress necessary to move toward degree completion requirements. National Survey of Student Engagement (NSSE) more recently collects information about student academic engagement in terms of reading, studying, writing, and the time spent preparing for class (NSSE, 2013). Academic integration recognizes that students are involved in scholarly activities with peers, faculty members, or advisors to promote learning.

The academic system proposed by Tinto included cultures and subcultures of student membership. The academic system encompasses formal and informal dimensions of student life. Multiple factors influence academic integration for students including college preparation (Pascarella, Edison, Mora, Hagedorn & Braxton, 1996; Tinto, 1987), the encouragement students received from others to persist (Nora & Cabrera, 1996), and by students' intentions to complete college (Napoli & Wortman, 1998). The degree to which students perceive a sense of academic fit with the institution is repeatedly measured by their perceptions (Nora & Rendon, 1990) or students' perceptions in combination with grade point average and other academic behaviors (Pascarella & Chapman, 1983). These academic behaviors may include student study hours, elective reading, attendance at campus cultural events, participation in academic support programs such as tutoring, remedial courses successfully completed, frequency of contact with academic faculty, and professional mentoring contacts (Nora & Rendon, 1990; Pascarella & Chapman, 1983).

Social integration. Tinto (1975) described social integration in his early work as "a notion of congruency between the individual and his [or her] social environment" (p. 59). Social integration, both formal and informal interactions with peers and faculty in structured or impromptu activities, when positive, can provide social rewards which presumably increase the likelihood a student will remain enrolled. Social integration recognizes that students are involved in activities with peers often considered informal. In the context of higher education, social integration often refers to interactions students have with others in both quantity and quality.

Pascarella and Terenzini (2005) identified consistent research that supports the notion that interaction with peers has the greatest impact on social integration. Social experiences that expose students to "diverse racial, cultural, social, value and intellectual perspectives

consistently have the greatest impact" (Pascarella & Terenzini, 2005, p. 615). The opportunities for students to engage in varied social opportunities have consistent impact on "knowledge acquisition, dimensions of cognitive development such as critical thinking and complexity of thought, principled moral reasoning, and self-rated job skills after college" (p. 615). Additionally, Pascarella and Terenzini concluded that peer interaction is a determinant factor in persistence and degree completion. They noted a consistent and powerful tendency for students to engage with others students who share similar values and attitudes as well as their socialization to peer group norms.

Connecting academic and social integration. While a student can be engaged in both forms of integration, neither academic nor social integration are mutually inclusive or exclusive. The use of Tinto's concept of integration is important as it takes Astin's (1977, 1993, 2005) model of student involvement that focuses on the role of the student in his or her success and expands it to include a student's environment, suggesting a reciprocal interaction. Pascarella and Terenzini (1983) used Tinto's model to explore social and academic interactions between institutional and individual goal commitment. The authors found evidence that academic and social integration had a positive influence on persistence as well as a positive correlation between the institution and individual as a student's goal commitment increased.

Recognizing that student-faculty interaction was evolving out of a Freirian model of instruction, Pascarella (1980) investigated the impact of a student's level of contact with faculty on educational outcomes. Pascarella (1980) found statistically positive correlations between students' levels of contact with faculty and five outcomes including; (a) career plans and educational aspirations, (b) satisfaction with college, (c) intellectual and personal development, (d) academic achievement, and (e) college persistence. This remained even after controlling for a

wide range of students characteristics. This finding provided support for the conclusion that institutions may be able to influence the extent and quality of student interactions on campus to promote student success. Pascarella and Terenzini (2005) reinforced these findings by also investigating formal and informal student–student and student–faculty interactions and concluded that the amount and quality of either type of interactions positively affected student outcomes.

Although a clear and comprehensive model of institutional action that supports students in their persistence has not yet been established, more recent research has explored factors that influence students' academic success throughout their enrollment. Pascarella and Terenzini (2005) noted that most studies of integration used controls for pre-college characteristics. Studies have inconsistent results that consider academic and social integration as linked to persistence. However, Braxton et al. (1997) found consistent evidence that social and academic integration serve to reinforce each other through moderating factors such as gender. Integration, both social and academic, continues to evolve as a noteworthy factor of influence, particularly during the first year (Tinto, 2001; Upcraft, Gardner, & Barefoot, 2004).

Integration as a Process

As noted above, the concept of integration is a fundamental element of Tinto's (1993) model of student departure. Tinto (2010) recognized that literature since the emergence of his integration notion, struggles with overlapping construct language including integration, involvement, and engagement. While these terms are often used interchangeably, each reflects a distinct component in the student development process as indicated in Figure 7.

Figure 7. The process of integration.

This model suggests that all students have an equitable opportunity to experience information. Opportunities may include formal or informal, social or academic relationships with others or within an environment. A student's ability to recognize an experience opportunity may be influenced by previous experience and comfort in engaging in presenting opportunities. Additional consideration should be given to the openness of the system (faculty to student, student to student, environment to student) for student inclusion. Failure for a student to access an experience will not allow for engagement, involvement, or integration to occur.

Engagement serves as the initial point of connection. This may be a student attending class or social event that puts him or her in direct contact with others. In this phase students have expressed a willingness to engage in an experience physically, cognitively, or emotionally that gives opportunity for integration to occur. Engagement does not guarantee involvement or integration, but instead, it is the point of contact that allows for additional interaction.

Involvement is the active participation that occurs as a student interacts with his or her environment. In this phase, an exchange of energy occurs that allows a student to classify the experience as positive or negative, socially or academically. Positive experiences can be described as inclusive, enveloping, and contribute to formal or informal learning. Negative experiences are those that reject the student's involvement and in turn, do not promote the opportunity for integration to occur. While integration is not exclusive to either academic or social categorization, it is unlikely that a student will experience one without the other.

Integration is identified as the outcome of the degree to which a student adopts or internalizes the academic/social information into his or her identity. Clarifying his point, Tinto (2010) noted that integration is inclusive of a "value interaction such as arises when one perceives oneself as a valued member of a community" (p. 78). Students who have active and positive involvement in formal or informal, social or academic opportunities are more likely to successfully experience integration.

Operationalizing Integration

Identifying what integration is, and demonstrating its impact, are two distinctly different challenges. As Astin's theory of involvement began to gain popularity as a means of explaining the interaction between psychological and behavioral dimensions of quantity and quality of student and faculty efforts, how to best measures these constructs has evolved as well (Astin, 1977, 1993). Researchers have historically used a series of questions to assess students' perceptions of academic and social integration with Likert-scale responses and subsequently correlated to tangible measures of success. Based on the work of student outcomes used by Pascarella (1980) and Pascarella and Terenzini (2005), researchers have predominantly identified outcome measures that target academic achievement, educational aspirations, affective responses to college, and intellectual and personal development. Measurable constructs such as college grade point average, degree aspirations, self-reported gains in critical thinking and social awareness as well as satisfaction with overall college experience are most often used.

Using student engagement as an indicator of institutional quality prompted closer attention to the methodology used to gather information about student integration and its link to measureable student success. With a focus on accountability as well as effective and efficient use of resources, the NSSE conceptualized the term of engagement as a reciprocal interaction

between a student's involvement and an institution's deployment of good practices, combined with quality of effort measures (Flynn, 2014). While the goal of NSSE is to use student engagement measurements for institutional assessment, accountability, and transparency, insights on engagement allows a better understanding of the impact of institutional and faculty interactions with students relative to students' success. The five benchmarks used to categorize engagement as good practice; (a) level of academic challenge, (b) active and collaborative learning, (c) student-faculty interaction, (d) supportive campus environment, and (e) enriching educational experiences. Allare built upon the early work of Tinto (1975), Astin (1977), as well as Pascarella and Terenzini (2005).

As college experiences that are linked to desirable institutional outcomes including retention, persistence, and achievement have risen in importance, the data generated by NSSE becomes increasingly valuable in its validity and reliability across multiple institutions (Kuh, 2001; Pike, 2006). Institution–specific analyses, though they may produce slightly different factors than the five indicated by NSSE, consistently provide positive associations between measurements of achievement, satisfaction, and persistence (Astin, 1993; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Pascarella, Seifert, & Blaich, 2009). Map-Works is one such measurement tool and is discussed in the next section.

Map-Works

Map-Works (Educational Benchmark [EBI], 2015) serves as a student information database designed to provide early warning intervention for students potentially at risk for academic struggle, social isolation, and potential dropout. Grounded in theories of student retention, engagement, development, and success as supported by Astin (1993), Bandura (1997), Bean and Eaton (2000), Chickering and Reisser (1993), Pascarella (1985), Pascarella and

Ternzini (1991, 2005), Tinto (1993), and Upcraft and Gardner (1989), Map-Works uses student reported perceptions on a range of topics to guide institutions toward supports and interventions that promote student success. Generally administered in the fall and spring, Map-Works also has spring and fall check-up reporting options available that are typically done later in the term.

Map-Works uses survey questions, student profile data, and outcome data (EBI, 2015). Survey question are grouped as categorical, numerical, and scaled. Categorical questions allow students to respond using categories such as parents' or guardians level of education. Numerical questions ask for a specific number response such as number of hours spent studying over the past week. Scaled questions are based on students' perceptions and use a scale of one to seven. Included in the report is the degree to which students perceive their engagement, participation, and integration into the campus culture.

Map-Works identifies social integration as a student's perception of (a) belonging, (b) fitting in, and (c) satisfaction with social life on campus. Based on historical research, academic integration within Map-Works is defined as (a) keeping up with academic work, (b) motivation to complete academic work, (c) degree of learning, and (d) degree of satisfaction with academic life on campus. Both constructs of integration are consistent with the benchmarks identified by NSSE. Finally, student profile data includes demographic information such as gender and entrance test scores while outcome data are provided by institutions and may include grade point average and retention information.

Factors of Student Risk

Factors used to predict students' risk in Map-Works measure the following concepts (a) early adjustment to college, (b) level of involvement, (c) attrition, (d) self-efficacy and institutional commitment, (e) engagement and effort, (f) student expectations, and (g) student

development. Upcraft, Gardner, and Associates (1989) gave attention to early adjustment and noted that interpersonal relationships and developing identity are key contributors to student success, particularly for freshmen. Retention programs such as improved advising, thorough orientation sessions, engagement in tutoring, peer mentoring, purposeful residence hall arrangements and freshmen seminars provide a greater range of opportunities to engage students in meaningful ways that in turn contribute to students' social and academic well-being.

Involvement. Astin (1970, 1985) argued that students learn through meaningful involvement. He noted that this requires psychological or physical investment of energy on the part of the student in a way that is consistent. Realizing that different activities require different amounts of energy, it is presumed that students will match the energy needed with the opportunity presented. Astin also recognized that merely investing time in an opportunity is insufficient. The quantity and quality of the involvement has the ability to influence positive or negative outcomes. As a result, the amount of student learning is proportional to the energy invested. Finally, Astin identified that any activity designed to promote involvement is only as effective as its capacity to actually engage students.

Attrition. Tinto (1975, 1987) provided a longitudinal model to address the college student's attrition process. Students enter college with patterns of personal experiences as well as intentions linked to college commitment and graduation goals. These goals are modified by academic and social experiences within the system. Positive experiences reinforce intentions to graduate and re-invest in the institution, whereas negative experiences may lead to attrition.

Self-efficacy and institutional commitment. Self-efficacy is identified by Bandura (1994) as students' "beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (p. 71). Self-efficacy is shaped by

students' perceptions of their cognitive and social abilities based on previous successes and failures as well as in comparison to others. Generally referenced in the context of learning and locus of control, it is positively correlated with academic performance. Institutional commitment was comprehensively assessed by Braxton, Sullivan and Johnson (1997) testing each proposition implied in Tinto's theory. Particular findings supported that the higher the level of students' integration the higher the level of students' commitments to the institution and subsequently, the higher likelihood students will persist in college.

Engagement and effort. Pascarella (1985) provided a model to support student engagement and effort that gives greater consideration to an institution's characteristics and environment as well as the interaction of five primary variables. The first two sets of variables, students' backgrounds and pre-college characteristics, as well as the organizational features of an institution, interact to create the institution's environment. These three sets influence a fourth variable including the quantity and quality of students' interactions with faculty and other students. The fifth variable, quality of effort, is influenced by students' background traits, the institutional environment, and normative shaping by peers and faculty members. This model indicates the institution provides an indirect influence on student development.

Student expectations. Student expectations can influence the degree of success that students experience in college. First reported by Stern (1966), many students have unrealistically positive expectations of college that can rarely be met. Jackson, Pancer, Pratt, and Hunsberger (2000) found this applies to nearly one-third of enrolled students given the multiple sources of information about college life and the specific dynamics of the institution students choose to attend. However, holding all else constant students who show higher discrepancies between expectation and experiences may be more likely to drop out (Baker, McNeil, & Siryk, 1985;

Gerdes & Mallinckrodt, 1994). More recently, Kreig (2013) found that parental and family involvement remains higher than expected for most students. Furthermore, she provided evidence to support that when students' expectations of their college experiences were violated, an increase in stress was reported. This higher level of stress may lead to student drop out or decreased levels of academic performance.

Student development. Chickering (1969) proposed a psychosocial development theory rooted in how people think about themselves and their environment. Built on Erickson's stages of development theory, Chickering, who gave emphasis to defining one's identity through relationships with others, saw a need for people to clarify who they were first. Based on seven vectors, Chickering's research influenced student development theory to encourage institutions to have clear objective focusing on meaningful relationships with awareness of the impact that institutional size culturally has on students. The vectors included (a) developing intellectual, physical/manual and interpersonal competence which increases as students learn to trust their abilities; (b) managing emotions, recognizing that all emotions are acceptable as signals and coping mechanisms; (c) moving through autonomy toward emotional and instrumental dependence; (d) developing mature interpersonal relationships with a capacity for intimacy as well as the tolerance and appreciation of differences; (e) establishing identity with an acceptance of all dimensions of one's self; (f) developing a purpose; and (g) developing integrity through humanizing values and congruency with socially responsible behavior.

Map-Works, Risk Items, and Related Research

Each of the seven factors of student risk items are integrated in questions that generate reports by Map-Works. These items are used to assist faculty and staff to work proactively with students based on factors historically linked to student success and students' responses including

trends, concerns, and resource opportunities. This flexibility to adapt to the needs of individual institutions allows for tailored and timely responses to specific students potentially at risk for academic underperformance, failure, and/or dropping out. Given its broad use nationally, Map-Works also has the ability to benchmark against peer institutions, allowing for program development to meet comparable needs (EBI, 2015).

Map-Works is currently used by over 80 institutions to measure student experiences and perceptions to improve efficiency in administration and student success. Additionally, to better understand trends and patterns that might be generalized to similar institutions, Map-Works data are used to explore particular student experiences of interest. For example, Woosley and Miller (2009) utilized Map-Works to determine if early college experiences impacted academic outcomes. Their results suggested both academic and social integration, as well as institutional commitment, positively impact retention. Furthermore, academic integration and institutional commitment were shown to positively impact grade point average.

Early institutional experiences were explored by Alexander, Woosley, Truell, and Zhao (2010) using Map-Works to explore self-assessment of core academic behaviors in first-semester classes. They provided support for faculty to emphasize and reinforce expected course behaviors particularly over the first three weeks including strategies on how to best engage in these behaviors. Male students were found to be in the most need of these supports based on the feedback of student self-assessments.

Map-Works data can be particularly helpful in early institutional experiences of first-generation students as evidenced by Woosley and Shepler (2011). They used Map-Works to study first-generation college students' early integration experiences consistent with Tinto's (1993) model of attrition. Results supported that first-generation and non-first-generation

students have similar social and academic experiences. However, early integration lends to a higher level of persistence. Students' perceptions of the campus environment were particularly influential in first-year students' ability to adjust to campus life. Those environments providing social and supportive opportunities were suggestive of greater academic and social integration, as well as retention.

To target a more specific population, Shepler and Woosley (2012) used Map-Works to explore the variables of Tinto's model of student attrition as an early predictor of college students with disabilities. They found that such students did not differ significantly from students who did not report having disabilities. A similar study explored levels of self-determination in first-year college students with and without identified disabilities using Map-Works data (Timmerman, 2014). This study specifically found self-regulation and resilience as significant factors, with particular differences between males and females. Using Map-Works data allows for insight into student experiences and perceptions that can be used at multiple levels of investigation, from the overall institution, into specific departments, and even to particular courses, and to understand the differential needs of students.

Academic Performance Outcomes of Integration

Astin (1993) identified two types of student involvement measures that can be considered in the discussion of integration outcomes. The first of these are those that occur as a student enters an institution and are considered "bridge" measures. These are the entering characteristics of a student such as financial aid and place of residence but also the environmental characteristics of the institution. Second are the intermediate outcomes that can be assessed after a student has been enrolled for a period of time and is the focus of this study. Astin categorized these measures as; (a) academic involvement, (b) involvement with faculty, (c) involvement with

student peers, (d) involvement in work, and (e) other forms of involvement. Kuh et al. (2005) conducted a broad scale study of the effect of student engagement on college grades and persistence. Using data from 18 baccalaureate granting institutions, they attributed student engagement as a factor that accounted for 42% of the variance in first-year students' grade point average, after controlling for demographic characteristics and pre-college characteristics. This result provided evidence that students' experiences once enrolled in higher education institutions have an impact on academic success.

Early academic performance studies focused on the impact of academic effort as linked to the type of courses in which a student is enrolled. For example, courses that emphasized writing skills had the greatest impact in self-reported growth in writing skills. Those that emphasized mathematics had the strongest positive impact of self-reported growth in analytical and problem solving skills (Astin, 1993). This was subsequently confirmed by Hu and Kuh (2002) who found natural science and engineering majors reported greater gains in scientific and quantitative reasoning then humanities and social science majors did.

Student-faculty interactions including conversations with faculty outside of class, working with a faculty member's research project, and being a guest in a faculty member's home has consistently demonstrated a positive correlation with academic attainment outcomes such as grade point average and degree attainment (Astin, 1993). Of particular impact is the engagement of students in educationally purposeful activities such as service learning (Avalos, Sax, & Astin, 1999). Terenzini, Pascarella, and Blimling (1996) argued that students' academic experiences both in and out of the classroom make unique contributions to explain variations in students' intellectual growth after controlling for pre-existing characteristics. Kim and Sax (2009) provided additional positive support of student-faculty interactions on students' academic

performance but urged caution, noting that the degree of difference was influenced by gender, race, first-generation, and socio-economic class.

Additionally, involvement with peers shows historically consistent positive correlations with growth in leadership skills, overall academic development, and cultural awareness (Astin, 1993). Kuh (1993, 1995) demonstrated how students' interactions with their peers positively influenced academic development, problem-solving and analytical skills, as well as self-esteem. This is particularly true with respect to social integration as students are most likely to remain enrolled with they feel a connection to others with similar goals and aspirations (Bean, 1980, Tinto, 1987).

Beyond generalized gains in academic skills, grades received have been shown to be a predictor of student persistence, degree completion, and graduate school enrollment (Pascarella & Terenzini, 2005). Pascarella and Terenzini asserted "virtually without exception, students' grades make statistically significant, frequently substantial, and indeed often the largest contribution to student persistence and attainment" (p. 397). This finding has held constant through students' precollege and college experiences over time.

Prospero and Vohara-Gupta (2007), using multiple regression analyses, found that academic integration had the highest positive contribution to academic achievement, namely GPA, than any other variable, particularly for first-generation students. More specifically, Astin (1993) identified that the amount of time invested each week in studying or doing homework consistently resulted in positive outcomes including persistence, academic achievement, and timely graduation. This was confirmed by Kuh (2008) who demonstrated that students who invested six to 20 hours of studying each week achieved nearly a .04 first-year grade point

average advantage. Those who invested 21 hours or more of studying each week realized a .12 point advantage.

GPA continues to be the most commonly used measurement of student success, though not without concern. Astin (1993) noted that while the concept of grades is familiar to all institutions, this measure is more likely to reflect a student's performance relative to other students versus the amount of learning and intellectual development achieved. This is compounded by the variance in how grades are calculated and the influential characteristics of each student (writing skills, motivation, general intellectual capacity, etc.) leaving GPA as a potentially inconsistent indicator of student success. Kuh (2007) suggested caution of the use of a singular outcome measure as evidence of student success, stating, "Strong performance on engagement, achievement, and graduation measures are certainly not mutually exclusive, but each says something different about institutional performance and student development" (p. 33).

Despite concerns of tabulation inconsistencies, GPA integration has historically been linked to academic performance and college completion (Ammons, 1971; Astin, 1973; Blanchfield, 1971; Greive, 1970; Jafe & Adams, 1970; Kamens, 1971; Tinto, 1975). As students who were historically considered at risk based on pre-college characteristics engaged in purposeful college activities, both formal and informal, there was a positive impact on their academic performance (Kuh et al., 2005). Purposeful student integration has been shown to have the greatest positive academic impact on students with lower cognitive abilities and those of historically under represented racial and ethnic populations (Cruce, Wolniak, Seifert, & Pascarella, 2006). This drives the critical importance of not only striving to engage students socially and academically, but of recognizing that students are unique and complex beings and not a monolith.

First-Generation Students

The enrollment of first-generation students in college has tripled since 1955 to over three million, 39% between 2000 and 2012 alone. Projections indicate that this population's enrollment will continue to increase an additional 14% between 2010 and 2021 (NCES, 2012). These reports suggest first-generation students will continue to compose a significant amount of the incoming student population. Receiving a considerable amount of research as an at risk population in the past decade, first-generation students are often compared using demographics and educational preparation factors to those who have a parent or primary caregiver who has completed a higher education program.

While there are varied definitions of how first-generation students are defined, the most common identify: (a) students from families in which neither parent has earned a college degree (Saenz et al., 2007); (b) students whose parents have never enrolled in a postsecondary education (Nunez & Cuccaro-Alamin, 1998); or, (c) students whose families have no college or university experience (Choy, 2001). Most studies using NCES data break first-generation students into three categories; (a) students whose parents have no experience in higher education, (b) students whose parent(s) had some experience, and (c) students whose parents had a bachelor degree or higher (Chen & Carroll, 2005; Nunez & Cuccaro-Alamin, 1998; Warburton, Bugarin, & Nunez, 2001). The categorization of students as first-generation is reliant on student self-disclosure making it difficult to confirm. The necessity of clarifying who the first-generation students are is best understood by considering their comfort level in navigating the higher education landscape. First-generation students may best be defined as those entering higher education with an absence of support and experiences compared to their non-first-generation peers. This study identifies first-generation students as those whose parents do not hold a four-year degree.

A review of the literature consistently demonstrated first-generation students to be at a distinct disadvantage with respect to basic knowledge of postsecondary education (Pascarella et al., 2004). This often begins with students' families of origin. While parent and family involvement varies by culture, first-generation students are less likely than non-first-generation students to receive help from parents in negotiating the college admissions process (Choy, 2001). Despite intentions of being supportive, parents of first-generation students may lack the information and understanding about the selection and application process of going to college, particularly the navigation of financial aid (Vargas, 2004). The pursuit of higher education may be hindered by a lack of social, economic, or language barriers to resources. Considering the multiple steps to college enrollment, first-generation students without guidance stand a higher risk of not enrolling even if they are well qualified.

Many first-generation students report minimal support, and at times, discouragement from families to attend college (Billson & Terry, 1982; Horn & Nunex, 2000; Terenzini, Springer, Yaerger, Pascarella, & Nora, 1996). First-generation students are more likely to come from single-parent households or those where grandparents and extended family members play a more significant role. Realization of the social and economic benefits of higher education may be of secondary importance to some first-generation students' families simply trying to sustain daily living based on current financial situations (Volle & Frederico, 1997). Financial limitations may lead first-generation students to delay entry into college and opt to attend an institution closer to home, allowing them to work and continue to engage with their family of origin (Nunez & Cuccaro-Alamin, 1998).

Conversely, first-generation students may see higher education as the only way to improve their socioeconomic status if they come from low socioeconomic families. The harmful

effects of privilege should not be overlooked considering students of continuing generation families have experienced a sense of protection from having to pioneer the higher education landscape. As first-generation students determine to engage in higher education opportunities, they must be met with support to allow them to successfully traverse through the complexities of admission, financial aid, and the enrollment process (Pascarella et al., 2004; Tinto, 1993; Vargas, 2004).

Once enrolled, some first-generation students find the transition into college stressful while they work to maintain family and personal relationships in their home communities (Richardson & Skinner, 1992; Terenzini et al., 1996). While first-generation students report the increase in career opportunities as their primary motivation to pursue higher education, this may be with lower levels of social and cultural capital as compared to their peers. This can lead to struggles in both the transition to higher education and integration with the campus environment once they arrive (Martinez, Sher, Krull, & Wood, 2009). Terenzini et al. (1996) found in a review of earlier research that first-generation students have a higher degree of transition difficulties than their peers socially and academically as they encounter both normative experiences including new environments as well as social and academic challenges.

Pascarella et al. (2004) explored the experiences of first-generation students once enrolled and showed they differed from that of their non-first-generation peers particularly in terms of integration. They noted that although first-generation students were involved in fewer formal and informal activities, their level of involvement did have a greater positive impact on science reasoning, writing skills, and educational degree plans than that of their non-first-generation peers. Conversely, first-generation students who had activities outside of the college arena were more negatively impacted by this time invested elsewhere than their peers. These

factors lead to lower levels of engagement for first-generation student compared to their peers as well as to lower levels of interaction with faculty (Pike & Kuh, 2005). The combination of these factors may in turn lead first-generation students to perceive campus environments and faculty as less supportive or less concerned about them compared to other students (Pike & Kuh; Terenzini et al., 1996).

Despite these efforts and a higher number of students who are making their way into higher education, many are not moving forward to achieve their higher education goals (ACT, 2013). DeAngelo et al. (2011) reported a nearly 14% point graduation rate difference is consistently demonstrated between first-generation students and their peers. This is most problematic at public universities who enroll the majority of first-generation students (Saenz et al., 2007).

Ishanti (2003) longitudinally evaluated the attrition patterns between first-generation students and their peers to find first-generation students were at a higher risk of dropping out throughout their college career. Notably, first-generation students had a higher degree of dropping out after the first semester. Additionally, being female and from a low-income family increased the negative effect on retention over time. Evidence in confirmation of Ishanti's findings was provided by D'Amico and Dika (2013) who additionally found previous academic preparation to be a significant indicator of attrition for first-generation students. For this study, the influence of academic preparation, as well as the enrollment, experiences, and persistence patterns of students from diverse backgrounds based on socioeconomic status, race, and gender (as defined on a binary scale of men and women) is explored in depth in the next section.

Academic Preparation of First-generation Students

When considering the success of first-generation college students, it is informative to explore studies that have investigated levels of academic preparation on key outcomes. Pennington (2004) suggested that the engagement of students in high school that promoted choices and competition for students, and the expansion of learning options during the summer, also promoted the likelihood of first-generation student college enrollment. Specifically, Horn and Nunez (2000) found that first-generation students who enrolled in advanced math and science courses in high school were more likely to be eligible for college admission, but those who enrolled in college often did not take these courses in college.

Furthermore, students who completed four years of math, science, and English in high school persisted to college completion more often than those who did not (Adelman, 1999; Warburton et al., 2001). ACT (2013) confirmed this for first-generation students reporting that students completing the recommended core curriculum (four years of English and three years each of math, social studies, and science), are more likely to be ready for college. ACT defines college readiness as having a 75% chance or higher of earning a C or higher in freshman year courses.

Hughes, Karp, Fermin, and Bailey (2005) noted that the expansion of credit-based transition programs such as technology preparation or dual credit enabled students to engage in high education curriculum with supportive academic and social networks to help encourage academic success and persistence. In the early 1970s, New York high school administrators were conferring about their concerns of the high stakes exam test structure of AP courses. They had growing unease with senior high school students becoming increasingly less engaged in their academic careers as they neared graduation, both of which are factors likely to impact their

transition into the higher education setting. This began the discussions that would evolve into the second primary early college program, concurrent enrollment. In 1972, Syracuse University (SU) administrators began to develop how courses taken within the regular high school curriculum could meet college credit requirements (Syracuse University, 2012).This model was designed to use available resources, which included current high school teachers and courses that would continue to move students toward successful graduation.

Unlike AP credit, concurrent enrollment does not depend on a single end of the semester exam and score to award college credit. Instead, concurrent enrollment is a semester-long experience that includes measurable assessments throughout the semester and is parallel to higher education traditional curriculum. This approach is less likely to serve the academically elite but instead begins to offer opportunities to students who are able to engage in the higher education curriculum learning process throughout the semester.

In March of 1997, Syracuse University convened a national meeting in Washington, DC at the American Association for Higher Education for those with growing interest in this model and the desire to develop national standards and policy for Concurrent Enrollment. By 1999, bylaws and a mission statement were adopted, and the National Alliance of Concurrent Enrollment Partnerships was created (NACEP, 2009). Currently this organization is “the national forum for concurrent enrollment, providing peer review of programs for accreditation, annual conferences, assistance with evaluation and research, work in government relations, and communication through its listserv, web site, and newsletter” (NACEP, 2009, para. 3).Currently 83 programs are NACEP accredited, which is valid for seven years (NCES, 2012). While still a relatively new transition approach for first-generation students, future research will determine the specific impacts for historically disadvantaged students.

The transition once enrolled in the first year of college is crucial to the successful persistence for first-generation students. Levitz, Noel, and Richter (1999) noted, "the first-to-second-year attrition rate is perhaps the most important determiner of an institution's graduating rate" (p. 36). Research has identified that work and high school transition programs provide experiential opportunities that enable students to explore interests and mentoring that support a successful college transition for first-generation students (Smith & Zhang, 2010). Smith and Zhang examined how factors such as parent and faculty members influence the transition experiences of first- and second-generation students. They reported first-generation students to have a higher work ethic (defined as habits, lifestyles, and behaviors) and lower rates of socialization than their peers as well as lower reported grade point averages. Additionally, first-generation students who had scholarship assistance and more frequent engagement with faculty members reported higher levels of successful transition than their second-generation peers.

Federal initiative such as TRIO that include Upward Bound, Talent Search, and Student Support Services as well as Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) target students prior to college admission and once enrolled, providing intensive tutoring, mentoring, and college planning information. State initiatives such as California's Early Academic Outreach Program (EAOP), Indiana's Upward Bound, and Florida's Bridges to Success each include strong pillars of support particularly for first-generation students. The 2010 national report of Upward Bound (U.S. DOE) gave evidence that transition programs such as these support first-generation student enrollment at four-year institutions. Additionally, the report gave evidence that these students were consistently completing their bachelor's degree within a timely manner, with particularly successful academic

performance in math and science compared to those who did not participate in transition programming.

Tinto (1993) cautioned that transition measures are frequently engaged with a one size fits all approach that neglects the diverse range of student needs. Tinto (200) expanded this perspective with encouragement to higher education administrators to move beyond the idea of simply integrating students. Twenge and Campbell (2001) exemplified this in their discussion of Generation Y students in higher education recognizing these students as more prone to anxiety and depression, though generally with higher self-esteem than that of their parents at a comparable age. They qualified this stating these students are less likely to conform, follow social norms, and repress their feelings, leading to increased rates of complaining and behavior with emotional inhibitions. Penn-Edwards and Donnison (2011) used this information to suggest that transition programming with regard to academic preparation particular to first-generation Y students, be one that is adaptive to students' needs with greater levels of concrete instruction and a learner-centered focus.

Socioeconomic Status

Socioeconomic status influences the amount of access to resources both prior to, and once enrolled in higher education. Students from higher socioeconomic backgrounds have access to cultural capital not always afforded to their peers, particularly those who identify as first-generation (Housel, 2012; Orbe, 2008). Cultural capital recognizes the cultural and social inequalities that exist between two or more groups of people. Heisserer and Parette (2002) noted that students from low-socioeconomic backgrounds can have poor-self concepts, histories of academic failure, limited educational experiences, as well as family commitments that may impede their educational goals. This makes navigating higher education, which generally

operates on middle to upper class norms, challenging to first-generation, low-income students who may be unfamiliar with hidden rules (Stephens, Fryberg, Marcus, Johnson, & Covarrubias, 2012). Additionally, review of the research has found common themes to suggest that low-income, first-generation students are more likely to delay their higher education beginning, initially enroll at two-year institutions, commute to campus, and maintain full-time employment which further distances them from the college experiences of their continuing generation, high-income peers (Inman & Mayes, 1999; Lohfink & Paulsen, 2005; Pascarella et al., 2004; Somers et al., 2004).

Economic circumstances influence both initial and sustained enrollment of students in higher education (Leslie & Brinkman, 1988; Paulsen & St. John, 2002; Tinto, 1993). The balance of higher education cost and degree attainment are influenced by a range of financial resources including institution, state, and federal sources that encompass grants, loans, scholarships, savings, and work-study. Students who experience financial stress in college are often those who struggle to sufficiently engage either academically or socially more than their higher socioeconomic peers (Cabrera et al., 1992; Goldrick-Rab, Harris, & Trostel, 2009; Haveman & Wilson, 2007; Ziskin, Fischer, Torres, Pellicciotti, & Player-Sanders, 2014).

When considering socioeconomic status, once enrolled Robb, Moody, and Abdel-Ghany (2011) demonstrated a link between lower income households and the number of credits students successfully took/completed in college. Students classified as low socioeconomic status were more likely to take the minimum enrollment requirements to maintain financial assistance eligibility. This decreased the opportunity to maintain the academic performance requirements in the event of a poor course grade more so than their higher socioeconomic peers. Additionally, these same students persisted in college at a lower rate than their peers.

Financial stress is broadly evident in part due to the realities of insufficient financial aid. Unmet need is considered the cost of a student's enrollment based on a budget, including tuition, fees, and other related costs, less the financial awards from the institution and student/family contributions (Choy & Premo, 1996). Research on the issue of unmet need has shown a clear inverse relationship between unmet need and the rate of students' persistence and timely graduation (Cibik & Chambers, 1991; Paulsen & St. John, 2002; Somers, 1994, 1995).

Expected family contribution (EFC) is determined for students seeking financial assistance from local, state or federal resources based on FAFSA information calculated annually. Consideration of family income, assets, expenses, and demographics are used to scale a minimum expected family contribution of funds for students from $0 to full tuition costs. Students falling below 90% of the maximum Federal Pell Grant ($5, 157 for 2014-15) is the typical threshold for low-income status (Federal Student Aid, 2014).

Trends of EFC reports indicate that more students are qualifying for Pell Grant awards (Bidwell & Hackett, 2015). African American students qualified at a higher rate than Hispanic and White students and it is the lowest income students who are most likely to receive Pell grants at a higher grant amount. Further, of students with high income just over one-third (39.6%) received non-federal aid in 2011-12. Asian undergraduates comprised the greatest portion of this population follow by Hispanic, American Indian, and White students respectively.

EFC becomes an interesting predictor when considering a study suggesting that students with higher family contributions graduate at a rate greater than their peers however, their grades tend to be lower (Hamilton, 2013). She suggests that these students are performing to meet basic graduation criteria but not maximizing academic opportunities during enrollment. The greatest negative impact comes from parents who contribute more than $40,000 having students who

drop to a 2.95 grade point average versus students with no parental aid achieving a 3.15 on average.

The Pell Grant Institute (2004) found students from low-income families are less likely than their peers to complete their college degree. Given that Chen and Carroll (2005) reported that 50% of first-generation students were classified as low-income compared to 7% of students whose parents held bachelor degrees, the intersection of first-generation and low socioeconomic student demographics is noteworthy. Mortenson (2007) discussed the success of first-generation, low-socioeconomic status students once enrolled noting that only 12% of students from low-income families persist to graduation compared to 73% of their high-income peers. Engle and Tinto (2008) again confirmed this finding drawing from three national datasets, the National Postsecondary Student Aid Study, Beginning Postsecondary Students Study, and Baccalaureate and Beyond Study. They reported first-generation, low income students were three times more likely to leave a four-year institution that their continuing generation, high-income peers. First-generation, low-income students were nearly four times more likely to leave after their first year than their peers. There is consistent evidence of first-generation college students with low socioeconomic backgrounds not persisting to graduation when they attend traditional four-year programs.

Race and Gender

A sharp increase in access to education for historically under represented populations was evidenced between 2000-01 and 2010-11. During this timeframe, the number of White students earning bachelor's degrees increased 28%, compared with the larger increases of 55% for Black students, 98% for Hispanic students, 53% for Asian/Pacific Islander students, and 32% for American Indian/Alaska Native students (NCES, 2012). However, when compared to the ratio of

degrees conferred, the trend to support minority persistence and graduation indicates less progress. Between 2000-01 and 2010-11, some incremental gains were evidenced. White students earned 69% of bachelor degrees (versus 75% in 2000-01), Black students earned 10% (versus 9%), Hispanic students earned 9% (versus 6%), Asian/Pacific Islander students earned 7% (versus 6%), and American Indian/Alaska Native students earned approximately 1% in both years (NCES). The glacial progress of successful enrollment and persistence to graduation for historically under represented populations reflects an alarming need to provide the supports to more effectively close this gap.

The access to higher education and successful completion for male and female students grew between 2000-01 and 2010-11. The number of bachelor degrees awarded to males increased 38% as did the number awarded to females. Females, however, continue to graduate at a slighter higher rate (58%) than males, which is the same percentage as 2000-01 (NCES, 2012).

When considering the college selection process, Cho, Hudley, Barry, and Kelly (2008) reported differences for first-generation college students based on race and gender. Minority students self-reported that the campus racial climate was an important factor in college selection, particularly among African American students. African American, Latino, and Asian first-generation students additionally heavily considered parental input in college choice. The sense of acceptance of racial diversity was a strong factor to all African American and Latino respondent in comparison to their peers of other races. Cho et al. reported the consideration of an institution's academic quality was rated as important to all first-generation students irrelevant of race or gender. First-generation African American females strongly considered academic quality in their college choice. However, Asian male students rated this quality as much lower in

importance than their peers. Academic quality was found to be of more importance to first-generation, low-income minority students compared to their peers.

Additionally, financial considerations of an institution in the selection process was rated the highest factor by African American first-generation women and African American non-first-generation males in which consideration was also given to socioeconomic status (Cho et al., 2008). Asian non-first-generation males rated financial considerations as their lowest factor for consideration. With regard to financial aid accessibility, African American first-generation females, African American non-first-generation males, and all Latino first-generation students rated this as the highest factor in all the selection consideration categories than other groups. Financial aid accessibility was a particularly salient factor for all students with low family income regardless of race, gender, or first-generation status. Each of these factors supports the need to consider race in the college selectivity process to ensure institutional fit between students' perceived needs and what the institution offers.

Keels (2013) reported that getting students enrolled is only part of the challenge to engage historically under represented students in successful higher education experiences and to realize timely movement toward graduation. She examined a freshman cohort of students at predominately White institutions in search of impacts of student race and gender characteristics that accounted for gaps in college outcomes. Keels found that Black woman obtained their college degree in six years at nearly twice the rate of Black men, though Latino men and women did not show any differences. Black men did however lag behind Latino, Asian, and White men in their degree attainment. When fall GPA was included, Latino men continued to evidence completion rate gaps vis-a-vis Asian and White men. These findings were consistent among Black, Latino, Asian and White women. Graduation attainment increased for non-first-

generation Black men, but no difference was found between non-first and first-generation Black women. This was an opposite effect for Latino students. There was no difference found in graduation attainment rate between non-first and first-generation Latino and Asian men and women.

Once enrolled, Kim and Sax (2009) found that student interaction with faculty served as a noteworthy influence on academic outcomes when explored by race. They found that all students experienced a significant increase in academic performance. Particularly, Kim and Sax identified Latino students with the greatest increase in grade point average, followed by African Americans, Whites, and Asian Americans.

Research activity for course credit, which also serves as a positive faculty interaction variable, was reported to be a consistent positive influence on student aspirations for higher degree attainment (Kim & Sax, 2009). This was reported highest among Asian Americans, followed by Latinos, Whites, and African Americans. The most positive effect on GPA was demonstrated by African American students who assisted faculty with research. However, African American students did not report a change in cultural appreciation or social awareness as did the other sub-groups.

Kim and Sax (2009) found male students more likely than female students to be engaged in faculty research for pay, compared to women who were more involved for course credit. Another difference in student-faculty contact was with female students who reported more frequent communication with faculty in person or electronically than males. However, males demonstrated more interaction during class sessions than females. Reported frequency of first-generation student interaction with faculty was less than non-first-generation students in

categories of research for course credit, communication in person or electronically, and exchanges with faculty during class sessions.

Students who participated in voluntary research were also reported to consistently increase their aspirations for higher education; however, this experience was reported to only influence the GPAs for African American and Asian students while White students reported larger gains in critical thinking and communication skills (Kim & Sax, 2009). Both males and females were found to have increased education aspirations based upon the influence of faculty interactions, with the relationship impact strongest for males.

Engagement with faculty using different forms and opportunities of outreach experiences was positively correlated with students' perceptions of belonging on their campus for all racial groups (Kim & Sax, 2009). Faculty members clearly expressing high expectations for academic performance, and engaging students in experiential opportunities appeared to have a positive impact on integration and academic outcomes. Giving intentionally designed opportunities for student-faculty engagement for particular student subgroups may be more likely to result in positive student success outcomes.

Lundberg, Schreiner, Hovaguimian, and Miller (2007) used a national sample to provide evidence of the unique effects of students' race and first-generation status on involvement and learning in higher education. They reported that all subgroups of students (African American, Native American, Mexican American, Asian or Pacific Islander, and other Hispanic or Puerto Rican) showed positive effects on their involvement in college experiences except for multiethnic students. Specifically, African American students consistently reported being engaged in the use of campus facilities, academic opportunities, student organizations, and frequent informal peer interactions. Mexican American and Hispanic or Puerto Rican students

had a high involvement in student acquaintances while more Native American students reported high involvement in scientific research. Asian or Pacific Islander students had greater involvement in computer and science experiences however, less course learning experiences. Being a multiethnic student served as a consistent negative predictor in library, computer, and campus facility use as well as writing and involvement with peers. Being multiethnic continued to serve as a negative predictor on personal learning goals.

When first-generation status was considered, Lundberg et al. (2007) found students to consistently be less involved with campus and peer interactions. However, those who did experienced consistent positive academic and learning gains. These authors posited that minority and first-generation students shared some common experiences, but students' involvement on campus and with peers, and subsequent academic and learning gains, were influenced by their identification with a particular race.

Complex Student Identities

In the previous section, first-generation students were discussed and nuanced via the lenses of academic preparation, socioeconomic status, and race and gender. This section builds from there via the formalized introduction of work that speaks to the complexity of identity, starting with Erikson (1968). Early work of Erikson focused on personal development across one's lifespan. Giving attention to stages that one moves through with age, his work is also significant in that he gave attention to the environment and context in development. Critiqued as being too general (Rogers, 1987) and lacking in its attention to women (Gilligan, 1982; Josselson, 1996) subsequent theoretical advances based on his work has moved to models that better consider multiple identities such as race, gender, religion, sexuality, and others, as well as how the intersections of these groups shaped students' identities in the higher education context.

Recognizing that early identity models neglected the lived experiences of historically underrepresented groups, theoretical alternatives were explored and that were sourced in the social movements of their time. Black identity models were proposed beginning in the 1960s and early 1970s during the civil rights movement (Atkinson et al., 1989; Cross, 1971; Jackson, 1975; Parham, 1989) followed by White identity models in the late 1970s and early 1980s (Helms, 1984). Feminist identity models were researched during the 1970s and 1980s as women's rights gained political attention (Downing & Roush, 1985), all of which provided the groundwork for consideration in the 1980s of the experiences lived within ethnic groups based on similarities and differences.

The construction of early race-ethnic identity models tended to focus on a single dimension of identity, though in the research of their applications, gender differences emerged. Cross (1971) found gender differences in his Black Identity Model, as did Williams (1975) in his exploration of Cross' work. Additional evidence was provided by Parham (1989) though his focus was solely on Black males. These and the repeated work of others (Carter, 1990; Delworth, 1989) suggested a single dimensional model would not suffice in describing the identity of those who have historically experienced oppression.

Cross' model was limited in its application since its inception; feminist identity theories based on this model (Downing & Roush, 1985) subsequently also failed to address multiple dimensions of identity development. Downing and Roush presented five stages as a linear developmental model as a woman: (a) passive acceptance, (b) revelation, (c) embeddedness-emanation, (d) synthesis, and (e) active commitment. Like Cross, Downing and Roush suggest women may recycle through stages during life experiences. Criticism of this model was provided by Collins (2001) who suggested the focus of Downing and Roush's model "is the degree to

which women are aware of gender roles and hold positive beliefs about women rather than how they see themselves" (p. 89). Further criticism by Collins noted the lack of Downing and Roush's model to recognize factors beyond feminism (e.g., race, religion, sexual orientation).

The operationalization of this model using the Feminist Identity Scale (Rickard, 1989), the Feminist Identity Development Scale (Bargad & Hyde, 1991), and the Feminist Identity Composite (Fischer, Tokar, Mergl, Good, Hill, & Blum, 2000) allowed for an in depth review of this model by Mordai, Subich, and Phillips (2002). Moradi et al. found general support for the individual stages of the model; however, mixed results to support the model as a linear process. Women responded with different perceptions of their feminist identity at different points in time. This lends to the complexities of identity development and the awareness of the presence as well as the intersections of multiple characteristics throughout one's life.

Additionally, early identity models were predominantly focused on membership in groups who historically experienced oppression. The minority identity model (Atkinson et al., 1989) gave attention to the struggle of members of diverse groups to relate to members of other oppressed groups without consideration that they may be members of both groups. Highlen, Reynolds, Adams, Hanley, Myers, Cox, and Speight (1988) brought attention to the internal processes that may occur when one is experiencing multiple oppressions at the same time. They posited that the shift may be influenced by one's environment, reference group, or individual needs, and likely the focus of which oppression is being experienced in a given moment.

Root (1990) proposed an identity resolution model considering the complexities experienced by bi-racial individuals. She suggested that those experiencing "internal conflict over a core sense of definition of self" (p. 204) have at least three resolution options. First, a passive resolution suggests the person accepts the identity that society has defined for him/her.

Second, an individual might identify with both groups, the one he/she identifies with and the one society has defined. Third, one might identity with a different group with others who also do not fit neatly into a singular category. Again, while this began to acknowledge the conflict between multiple identities, the model was limited in scope and did not include contextual influences.

Reynolds and Pope (1991) built on the biracial identity model proposed by Root (1990) to develop the Multidimensional Identity Model (MIM). This also focused on identity resolution and allowed for four options to an individual experiencing conflict, each of which are considered acceptable. The first of these was to identify with one aspect of self as society defines it to be, also considered passive acceptance. This might be identification based solely on sex or race as seen by others. The second was to identify with one aspect of self, defined as conscious identification. This might also be based on sex or race but is self-selected. The third was to identify with multiple aspects of self, yet presentation as a one-dimensional identity is also possible. This might include one living in a community among others who share a single common identity and allowed the freedom to experience his/her other identities openly. This may be more influenced by the dominant group such as a Black woman who is gay, being seen as either Black or gay, instead of both. Finally, identity intersection may be considered which allows for identification of multiple identities. This option may include individuals with similar multiple oppressions to live together, minimizing the need to isolate any particular sense of self. While MIM began to identify the need to recognize multiple identities, it was one built on discussions of multiple oppressions continuing to marginalize consideration of all people.

Influenced by the work of Deux (1993) who considered that identity is an internal and an external process, and McEwen (1996) who built a representative model that allowed a moment in time that is inclusive of multiple identities to be considered, Jones and McEwen (2000) proposed

a conceptual model that considered multiple dimensions of identity. Using college students in a grounded theoretical approach, the model was based on ten key findings;

> (a) relative salience of identity dimensions in relation to difference, (b) the multiples ways in which race matters, (c) multiple layers of identity, (d) the braiding of gender with other dimensions, (e) the importance of cultural identifications and cultural values, (f) the influence of family and background experiences, (g) current experiences and situational factors, (h) relational, inclusive values and guiding personal beliefs, (i) career decisions and future planning, and (j) the search for identity. (p.408)

The authors noted the core category is created as "an integrative function by weaving together the key categories" (p. 408).

The model of multiple dimensions of identity (see Figure 8), is considered to be fluid and dynamic acknowledging that one's identity development is influenced by changing contexts (Jones & McEwen, 2000).

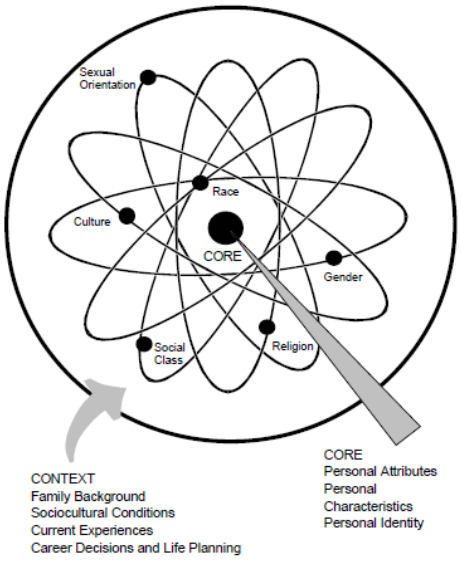

Figure 8. Model of multiple dimensions of identity (Jones & McEwen, 2000, p. 409). Used with permission.

The center of the identity is considered the core sense of self. This core identity is often protected from others and is inclusive of personal attributes and characteristics. The circles represent the identity dimensions as recognized by the individuals in the study. In the Jones and McEwen (2000) study, these factors included, race, culture, class, religions, gender, and sexual orientation. However, they suggested that this might be expanded to include other dimensions in subsequent studies. Recognizing the intersections at multiple points in the model gives attention that each dimension can only be understood in relation to the others, and more than one can be experienced at any given time. The dots on the circle reflect the saliency of the identity in a single point in time. This allows for the fluidity of the model, noting that the dots may shift based on contextual experiences which is represented by the larger circle.

Abes and Jones (2004) used a narrative methodology and a constructive theoretical framework to investigate how students make meaning of their self-perceived identities. Students were asked to map their identity into the model of multiple dimensions of identity (Jones & McEwen, 2000) for data analysis. Using comparative analysis and the participants' narrative, Abes and Jones reported that meaning-making capacities were a result of a relationship of contextual influences (such as family backgrounds and social norms), meaning-making structures (determinates if identity is constructed through an internal sense of self or through external expectations), and the content of identity (the understanding of one's own identity).

Abes, Jones, and McEwen (2007) suggested that incorporating meaning-making capacity as presented by Abes and Jones (2004) into the model of multiple dimensions of identity (Jones & McEwen, 2000) would more accurately reflect the relationship between context and saliency of identity dimensions, as well as social identities and the core identity (see Figure 9).

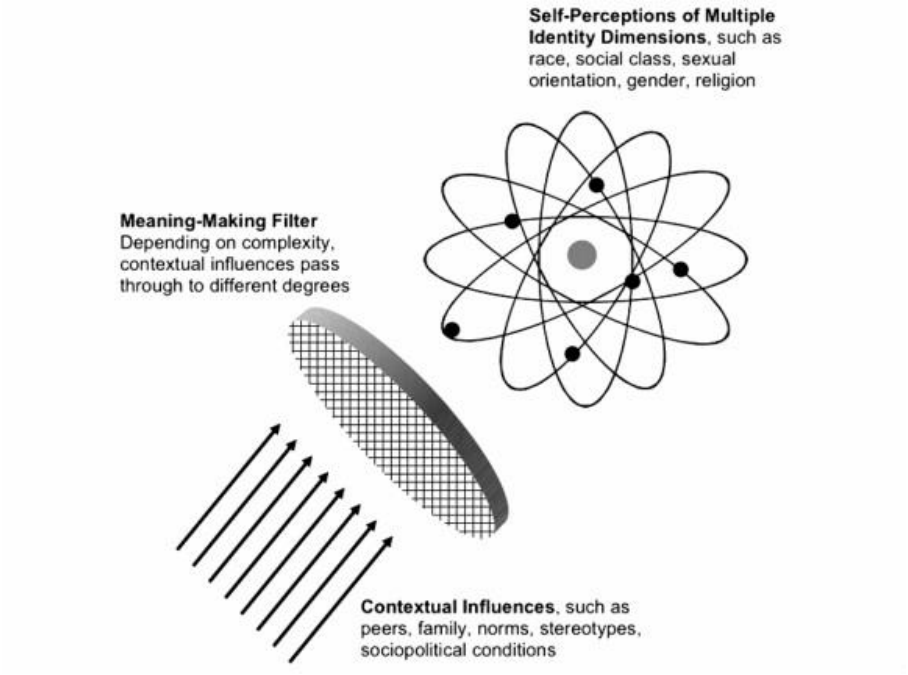

Figure 9. Reconceptualized model of multiple dimensions of identity (Abes et al., 2007). Used with permission.

The social identity dimensions are consistent with Jones and McEwen, though contextual influences such as peers, family, norms, stereotypes, and sociopolitical conditions are indicated as arrows external to identity. How contextual influences move through the meaning-making filter depend on one's meaning-meaning making capacity. This allows for a better understanding not only between context and one's identity but between one's social and core identities. This model "provides a richer portrayal of not only *what* relationships students perceives among their personal and social identities, but also how they come to perceive them as they do" (p. 13).

Identity Complexity in this Study

A core element of this study was to explore identity complexity via the factors of race, gender, and socioeconomic status for first-generation college students, and their interaction with

academic and social integration. Using the reconceptualized model of multiple dimensions of identity discussed earlier (Abes et al., 2007) allows students to be separated from the monolith of a generalized categorization (e.g., first-generation). This approach recognizes how contextual influences, such as perceptions of social and academic integration, are filtered through one's ability to make meaning of the information as well as how it influences students' identities based on factors of saliency. As first-generation students entering higher education will likely frame their college experiences differently than that of their non-first-generation peers, the recognition of multiple identities through the use of making-meaning capacity allows a deeper understanding of the impact of integration on academic outcomes. This approach provides nuanced evidence that a particular point in time or environment has the ability to shape a student's perception of identity and how he or she interacts with the environment. This combination then has the ability to influence academic performance.

The specific scope of this research, then, was to address how academic integration and the moderating effects of student characteristics influence academic performance (see Figure 10).

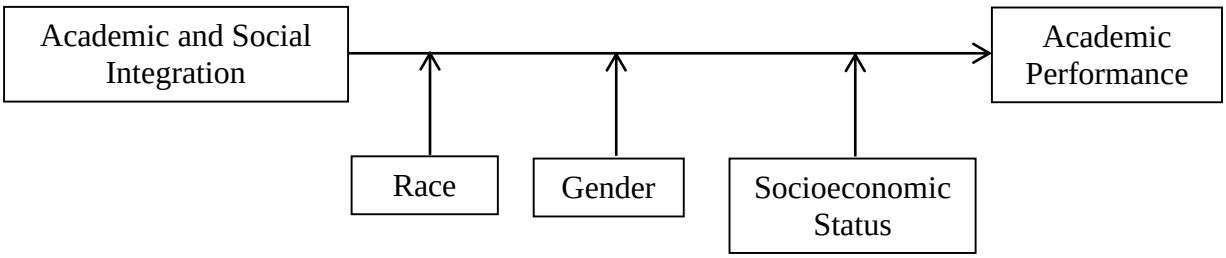

Figure 10. Model of integration influence and moderating effects of student characteristics.

Given that the first year of higher education is a highly influential and transitional time for most students, this study focused on the saliency of the spring semester of the first year of enrollment. All students were selected from a single institution for the purpose of consistency, realizing that the institutional environment has an impact on student learning and cognitive development.

Students involved in this study were those who include first-generation as part of their identity. Given that identity is rarely monolithic, race, gender, and socioeconomic status are additional identities explored with respect to their interaction with academic and social integration. These three were chosen in light of previous research linking them to issues of privilege and oppression in a higher education context. Academic performance in this study was measured by grade point average achievement which has been demonstrated as an acceptable outcome measure.

The recognition that students have multiple identities within the higher education context gives one the ability to recognize the student from a more holistic perspective. Historically, higher education institutions have created programs based on salient risk factors (such as race, gender, socioeconomic status, or first-generation) that only meet generalized components of students' identities. Using an approach that recognizes the intersectionality of student characteristics and how they shape student identities based on context is valuable to better inform targeted policy and practice interventions that can lead to student success.

Summary

This chapter presented the literature to support the continued investigation of first-generation student performance in higher education based on multiple identities. First, identification of college impact models that support an understanding of how student change occurs was presented. Support for academic and social integration was provided with a discussion of how these concepts are connected as a process. Evidence for the use of Map-Works as a data collection system was demonstrated and validation for the use of earned grade point average as a learning outcome measure. A review of previous research on first-generation students was discussed with particular emphasis on academic preparation, socioeconomic status,

as well as race and gender. Finally, justification was demonstrated of the importance to consider the complex identity of students and the influences of context on academic outcomes.

CHAPTER 3

STUDY DESIGN AND METHODOLOGY

The purpose of this study was to investigate the relationship between academic and social integration on the academic performance of first-generation freshmen students. Furthermore, the study sought to investigate if gender, race, and socioeconomic status moderate the relationship between academic and social integration and the academic performance of first-generation freshmen students. Finally, the study sought to develop academic and social integration profiles to investigate if there are differences among the profiles with respect to academic performance. The specific research questions are as follows:

1. What effect does academic and social integration have on first semester grade point average of first-generation students?
2. Do (a) gender, (b) race/ethnicity, and (c) socioeconomic status moderate the relationship between academic and social integration and grade point average of first-generation students?
3. Is there a difference in first semester grade point average of first-generation students based on academic and social integration profiles?

This chapter describes the study design and methodology used to answer the research questions. It is organized as follows: study design, participants, variables examined, data analysis, and study limitations.

Study Design

This study used a quantitative design, an approach that serves to understand a phenomenon in breadth with the intent of generalizing to a population. The focal institution for this study is a public residential four-year regional institution. The quantitative research design provides a method for investigating relationships between the independent and dependent variables as well as academic performance differences based on select demographics. This study is informed by previous research evidencing the importance of social and academic integration for students as well as their nuanced antecedents and impacts for select student subpopulations, including first-generation students (for example, Astin, 1977, 1993; Choy, 2001; Nunez & Cuccaro-Alamin, 1998; Pascarella, 1980, 1985, 2006; Pacarella et al., 2004; Saenz et al., 2007; Terenzini et al., 1996; Tinto, 1993, 1995; Vargas, 2004).

Participants

The sample for this study consisted of first-year, first-generation students enrolled full-time who completed at least two semesters of college at a public four-year institution located in the Midwest during the 2012-13 academic year. This regional state institution with normal school roots emphasizes a tradition of graduate and undergraduate education since 1865. Accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools since 1915, this institution offers more than 100 majors in six colleges including accredited programs in Colleges of Arts and Sciences, Business, Education, Nursing, Health and Human Services, as well as Technology.

This collegiate community has a total student population of approximately 12,500, of which 2,261 enrolled as first-time freshmen in fall 2013. Class sizes are typically 30 students or fewer while the institution hosts a student-faculty ratio of 20:1, allowing for interactive education

rooted in constructivist theory (Dewey, 1916) and critical pedagogy (Freire, 1968). Approximately one-half of entering freshmen at the institution identify as first-generation, defined as neither parent has a bachelor's degree, and approximately one-third have neither parent with a postsecondary degree of any kind. Women are a slight majority on campus (54%). Students identified as non-White represent 33% of the population, and 92% of the full-time beginning undergraduate student population are reported to receive financial aid, 53% in the form of a Pell Grant, indicating low socioeconomic status (NCES, 2014). Serving a higher proportion and aggregate number of low-income and greater number of minority students compared to similar tier one and two Midwestern public state institutions, most students are from in-state residences.

Data Source: Map-Works

Data for the study was retrieved from the institution's student information database called Map-Works. Map-Works is a system primarily designed to provide early warning intervention for students at risk of academic struggle, social isolation, and potential dropout (EBI, 2014). However, it is also suitable for post-facto analysis of numerous kinds, including the research integrated into this dissertation study.

The Map-Works database builds in part from the Map-Works survey, a tool by which risk data are collected on freshmen. Other sources of student data that are loaded into the Map-Works database and that are relevant to this study include demographic data of interest as well as academic performance information including semester GPA.

The Map-Works instrument as noted in Chapter 2 is grounded in theories of student retention, engagement, development, and success as supported by Astin (1993), Bandura (1994), Bean and Eaton (2000), Chickering and Reisser (1993), Pascarella (1985), as well as Pascarella

and Terenzini (1991, 2005), Tinto (1993), and Upcraft and Gardner (1989). Map-Works uses student reported perceptions on topics that map to 20 factor categories, described in Table 1 along with their reliability scores, to guide institutions toward supports and interventions that promote student success.

Table 1

Factor Scale Categories and Reliability Analyses

Factor (Scale Name)	Number of Questions	Reliability (α)
Commitment to the Institution	3	.79
Self-Assessment: Communication Skills	2	.75
Self-Assessment: Analytical Skills	2	.70
Self-Assessment: Self-Discipline	3	.79
Self-Assessment: Time Management	4	.77
Financial Means	3	.88
Basic Academic Behaviors	5	.69
Advanced Academic Behaviors	6	.80
Academic Self-Efficacy	3	.86
Peer Connections	3	.93
Homesickness: Separation	3	.63
Homesickness: Distressed	4	.86
Academic Integration	4	.87
Social Integration	3	.90
Satisfaction with Institution	3	.89
On-Campus Living: Social Aspects	3	.86
On-Campus Living: Environment	3	.73
On-Campus Living: Roommate Relationship	3	.81
Off-Campus Living: Environment	3	.75
Test Anxiety	3	.88

Note. Adapted from EBI (2014), p. 9.

Factor analysis, Cronbach's alpha reliability scores, and standard investigative statistics were used to validate the factor items (EBI-Map-Works, 2015). As can be seen in Table 1, all Cronbach's alpha levels (α) are at or above the .7 level (Nunnally, 1978) and ranged from a low of .7 to a high of .9. Furthermore, the factor scales of interest, academic integration and social integration, were .86 and .87 respectively, well above the traditional cut off value of .7.

Table 2 provides the specific questions that make up these respective factor scales for academic and social integration as explored in this study. In addition to reliability analyses on the

Table 2

Academic and Social Integration Items from Map-Works Survey

Factor	Question Number	Question
Academic Integration		
	Q152	Overall, to what degree are you: Keeping current with your academic work
	Q153	Overall, to what degree are you: Motivated to complete your academic work
	Q154	Overall, to what degree are you: Learning
	Q155	Overall, to what degree are you: Satisfied with your academic life on campus
Social Integration		
	Q156	Overall, to what degree: Do you belong here
	Q157	Overall, to what degree: Are you fitting in
	Q158	Overall, to what degree: Are you satisfied with your social life on campus

Note. Adapted from EBI (2014), p. 9.

Map-Works factors, additional psychometric data provide support for the validity of the survey and its underlying questions. More specifically, descriptive statistics, regression models (both linear and logistic), classification and decision tree methods, path models and theme coding of open-ended responses, were examined to check the scales for abnormal response patterns (EBI, 2015). Correlational analysis and cross-tabulations using Chi-square analysis were used to explore and determine the predicted relationships among the constructs. Factor analyses, both predictive and discriminant, were completed to determine the validity of factors. These evaluations allow for the statistical grouping of questions into the 20 categories (EBI, 2015).

Variables

As noted previously in this dissertation, the selection of academic and social integration as factors of interest to student success has a long history undergirded by the work of Pascarella and Terenzini (1991, 2005) and their college impact model and specifically by Astin's (1993) I–E–O model. The college impact model recognizes that variables may be student related, organizational in nature, or environmental (Pascarella & Terenzini, 2005). This model notes that students' growth and development are impacted by five sets of variables: (a) students' precollege traits, (b) the institution's organizational characteristics, (c) the campus culture, (d) socializing agents on campus, and (e) the quality of effort put forth by students (Pascarella, 1985). Pre-college traits including demographics (race, gender, and socioeconomic status in this study) and preparation (high school grade point average as a control variable) influence student experiences and needs as well as the campus culture. Socialization and student efforts reflect the perception of engagement both academically and socially.

Using Astin's (1985, 1991, 1993) I–E–O model, three primary constructs support variable selection: (a) characteristics of students upon entry to college (demographics), (b)

experiences during the first year (i.e., academic and social integration), and (c) an outcome related to the inputs and experiences (i.e., grade point average). This approach highlights the importance of recognizing students' demographic factors as a product of their self-identification, namely gender, race, and socioeconomic status, and self-perceptions of integration, as contributing factors that may influence the dependent variable (academic achievement) in this study. The performance outcome (academic achievement) for this study was reflective of this interaction which contributes to how institutions can best create a campus climate that maximizes student support.

Informed by the theory bases noted, the specific variables to answer the first two research questions for this study included two independent variables (academic integration and social integration), one dependent variable (grade point average at the end of the first semester), three moderator variables (gender, race, and socioeconomic status), and two control variables (high school grade point average and the amount of unmet need based on their financial aid packaging). For the third research question, there was a set of four derived independent variables that equated to academic and social integration profiles.

Independent Variables

The process of student to university (and vice versa) connection has historically been referred to as integration with the intent to increase student retention (Astin, 1977; Pascarella & Terenzini, 1980; Tinto, 1987). As noted in Chapter 2, research has historically broken integration into separate constructs of social and academic integration. Social integration is generally recognized as the perception that students are engaged in peer and/or cultural activities that are more informal in nature such as organizations, common recreation, or social circles. This allows academic integration to be recognized as a perception that students are engaged with the

institution in a scholarly way such as meeting with faculty and advisors or using academic enrichment opportunities. As indicated earlier, Map-Works operationalizes academic and social integration separately using a series of questions in both categories answered on a seven-point Likert scale ranging from 1 (*not at all*) to 7 (*extremely*).

Academic integration. Map-Works uses four questions to determine academic integration for students:

1. Overall, to what degree are you: keeping current with your academic work?
2. Overall, to what degree are you: motivated to complete your academic work?
3. Overall, to what degree are you: learning?
4. Overall, to what degree are you: satisfied with your academic life on campus?

The scores as noted previously are on a seven-point scale ranging from one to seven. Rating scores are combined to give a summative score between 4 and 28. A higher score indicates higher academic integration. Hence, for Research Questions 1 and 2, academic integration was operationalized as a continuous measure that is the total of the four rating-scale questions.

Social integration. Map-Works uses three questions to determine social integration for students:

1. Overall, to what degree: do you belong here?
2. Overall, to what degree: are you fitting in?
3. Overall, to what degree: are you satisfied with your social life on campus?

The scores as noted previously are on a seven-point scale ranging from 1 to 7. Rating scores are combined to give a summative score between 3 and 21. A higher score indicates

higher social integration. Hence, for Research Questions 1 and 2, social integration was operationalized as a continuous measure that is the total of the three rating-scale questions.

Academic and social integration profiles. Given that a focal interest of this study was to test the proposition that first-generation students are not a monolith and that targeted support may have the potential for greater impact than across the board support, Research Question 3 was also integrated into this study. More specifically, a set of profiles operationalized as a collective integration indicator was derived based on the *combination* of academic and social integration that can then be plotted onto a 2x2 matrix ranging from low to high on the X (academic integration) and Y (social integration) axes. Figure 11 visually reflects how this plotting occurred, namely with the summative score from academic integration and the summative score from social integration reported in fall 2013 plotted to give a visual representation of students' integration scores.

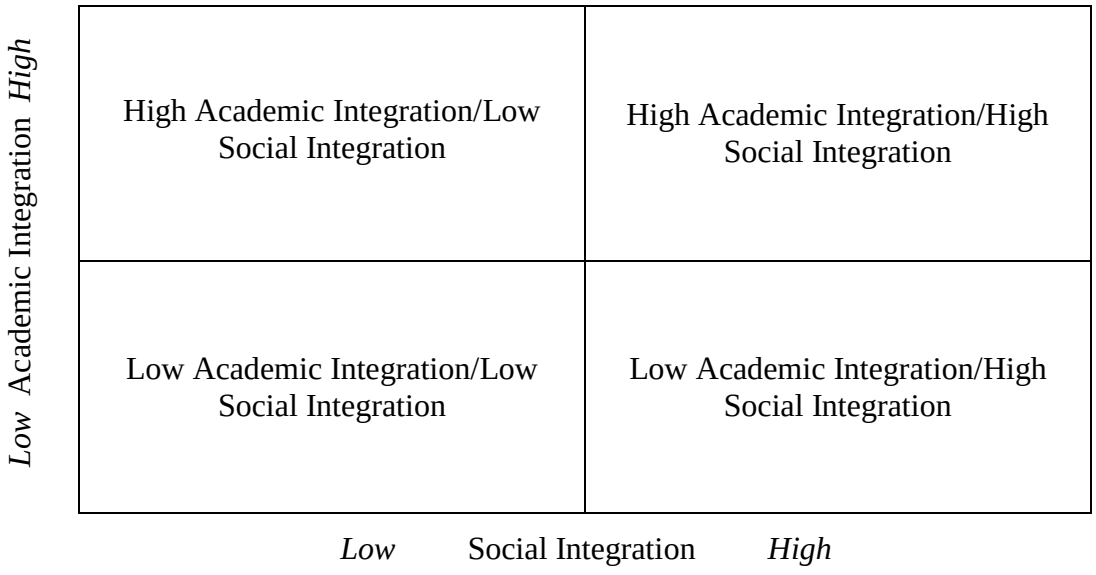

Figure 11. Academic and social integration profiles.

With the respective median integration scores serving as the respective midpoints, four categorical profiles were created. These included low academic and low social integration (lower left), high academic and low social integration (lower right), low academic and high social integration (upper left), and high academic and high social integration (upper right).

Dependent Variable

The outcome of grade point average at the end of the first semester of the freshmen year served as the dependent variable in this study. Grade point average is consistently used by higher education institutions to measure academic performance. It is often used as a student performance indicator as those who demonstrate poor academic performance are less likely to be retained, making this an appropriate unit for student academic success analysis (Pascarella & Terenzini, 2005; Seidman, 2005; Tinto, 1987). Grade point average is a statistical mean generated by the total sum of grade performance points received, divided by credit hours successfully completed. Grade point average was operationalized on a standard four point scale as a continuous measure = *0.0 – 4.0* as reported by the Map-Works system at the end of the fall semester.

Moderator Variables

Moderating variables alter the strength of a statistical relationship. The use of moderator variables help to determine how broadly statistical effects of integration on academic performance can be predicted (Kenny, 2013). Three moderator variables were considered for this study: (a) gender, (b) race, and (c) socioeconomic status. Students' gender was classified as male = 0 and female = 1 consistent with data set from BANNER. Race was classified as students who identify as White, non-Hispanic = 0 and students who identify as Non-White = 1. Finally,

socioeconomic status was a continuous value reported as expected financial contribution as identified in BANNER.

Control Variables

To best investigate the relationship between integration and academic performance, while minimizing other factors that may be influential as evidenced in previous literature, two control variables were used in this study. These variables included (a) high school grade point average (HSGPA), and (b) level of unmet financial need. First, it is well established that academic preparation can influence higher education academic success (Pascarella, 1980). The use of high school GPA as a reflective measure of student preparation assisted the impact of this factor. It was operationalized as continuous on a 1-4 scale. Second, students who experience financial stress in college are often those who struggle to have the time, or the personal capital, to sufficiently engage either academically or socially (Alon, 2011; Cabrera et al., 1992; Goldrick-Rab et al., 2009). Financial stress was operationalized as the level of unmet need based on one's financial aid package. It was a continuous variable ranging from 0 to the highest level of unmet need as reflected in the dataset.

Data Analysis

As mentioned, the data was drawn from the Map-Works database which provides insight on student perception of academic (AI) and social integration (SI), individualized data of student demographic including high school grade point average (HSGPA), unmet financial need (UMN), race (R), gender (G), and socioeconomic status (SES) and academic performance in the first fall semester (GPA). The data were drawn from the 2013 fall term survey deployment of Map-Works used to capture student feelings and attitudes within the first 3-6 weeks of their freshmen year start. Participant confidentiality was ensured as the researcher received the data in archival form

with identities stripped from the dataset. The data for all variables of interest was received in a singular dataset.

Descriptive Statistics

Descriptive statistics were used to describe data for each of the variables in this study (i.e., mean values, standard deviations, and range figures). Frequency rates for dichotomously coded variables were also reported. This collective data provided context to the inferential analysis that follows.

Inferential Statistics

Ordinary least squares (OLS) regression was deployed to answer all three research questions. Prior to the analysis, tests of the data for suitability for OLS regression was performed based on the assumption of this statistical model procedure. Assumptions for regression include (a) the relationship between each predictor and the outcome is linear, (b) the residuals are not correlated with any of the predictor variables, (c) the residuals are normally distributed, (d) the variance of the residual at all levels of the independent variables is constant, (e) the predictor variables are measured without error, and (f) the model is appropriately designed (Field, 2009).

To test that regression assumptions were met, a series of diagnostics was completed. First, normality was tested investigating for skewness and outliers that may influence the validity of the findings. Log and square root transformations were considered as well as removal of outliers, however, doing so did not alter regression results. Therefore, date was used for the ease of interpretation. Second, tests of collinearity were used including a bivariate correlation matrix and Pearson's *r*. Correlations near or above .8 are highly suspect and may need consideration for removal from the model (Field, 2009), although correlations above .4 can also possibly be reflective of excessive collinearity. Significant relationships in the correlation matrix suggested

issues of multicollinearity between the main variables supporting the use of centered variables (Field, 2009). To further explore for excessive collinearity once the centered variables were established, variance inflation factors (VIFs) were determined using SPSS. Myers (1990) suggested that a value of 10 or below has little cause for concern while Bowerman and O'Connell (1990) suggested that a VIF value greater than 10 may indicate that multicollinearity is biasing the model. Additionally, a tolerance statistic, also generated by SPSS, was utilized to bring attention to those values below .2 (Menard, 1995). Additionally bock step regression was conducted first removing social integration, then alternatively with the removal of academic integration. Consistent results for the remaining independent variables suggested no further concerns for collinearity.

Second, the data was assessed for outliers with high leverage that may increase an overall error in prediction. This was done using scatterplots and a linear regression diagnostic using SPSS to produce residual and normal probability plots. Values falling outside the acceptable range were explored in greater depth, which led to a consideration for possible removal or of variable transformation.

Once the data were set for appropriate OLS regression analysis, answering the research questions was possible. Three models were used to answer the first two research questions as show in Table 3. The approach was a block step method to ascertain additional contribution.

Table 3

Regression Models for Research Questions 1 and 2

Variable	Model 1	Model 2	Model 3
High School GPA	X	X	X
Unmet Financial Need	X	X	X
Academic Integration		X	X
Social Integration		X	X
Gender		X	X
Race		X	X
Socioeconomic Status		X	X
Academic Integration x Gender			X
Academic Integration x Race			X
Academic Integration x Socioeconomic Status			X
Social Integration x Gender			X
Social Integration x Race			X
Social Integration x Socioeconomic Status			X

First, Model 1 was run and included only the control variables (CGPA = HSGPA + UMN + e). Research Question 1 inquired of the effect of academic and social integration on first semester GPA of first-generation students. This was addressed with Model 2 that included both the control and independent variables (CGPA = HSGPA + UMN + AI + SI + R + G + SES + e) such that the degree to which the independent variables contribute significantly more to Model 1 was also investigated.

Research Question 2 asked if there was a moderating effect of gender, race, and socioeconomic status on the relationship between academic integration (AI) and social

integration (SI) and grade point average of students. Baron and Kenny (1986) defined a moderator as a "qualitative (e.g., race, sex, class) or quantitative (e.g., level of reward) variable that affects direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable" (p. 1174). Given that relationships between independent and dependent variables in human experiences can be complex, to better understand the relationship in this dissertation study, the moderating variables of gender (G), race (R), and socioeconomic status (SS) were tested for interaction effects using Model 3 (GPA = HSGPA + UMN + AI + SI + R + G + SES + AI*R + AI*G + AI*SES + SI*R + SI*G + SI*SES + e).

As noted, the above modeling followed a block step approach to the analysis. Field (2009) explained that this method "will give a measure of how much 'new variance' in the outcome can be explained by each remaining predictor" (p. 212). Blockwise entry allowed temporal separation (control variables that characterize the student coming into college as distinct from what happens to him or her while in college), as well as enables one to see the degree to which the independent variable analysis (Model 2) and the moderator variable analysis (Model 3) added substantive explanatory power to the model. The appropriate statistics were reported for each model (variable beta weights, *F*-values, adjusted *R*-squared values, and indicators of significance at the .05, .01, and the .001 levels) in Chapter 4.

With respect to Research Question 3, it again used OLS regression in block steps, control variables in Model 1 and independent variables in Model 2. In this case, though, the independent variables were the four dichotomous measures reflective of the four profiles. Hence, the modeling enabled determination if after controlling for high school GPA and unmet financial need, there were differences in academic performance among the four category profiles, low-academic and low-social integration, high-academic and low-social integration, low-academic

and high-social integration, and high-academic and high-social integration. Descriptive statistics as well as means GPAs and standard deviations were explored for differences between students.

One-way ANOVA was used to best control for Type I error (Field, 2009). Further *t-test* comparisons were used to investigate for significant mean differences with attention given to effect size using Cohen's *d*. Levene's test indicated the variances were significantly difference and therefore violated the assumptions of homogeneity. Welch's *F*-test was utilized to provide a richer result of the equality of the means. The variance ratio was considered to explore a need for data transformation, however this was not found to be necessary as it had minimal impact on the results as previously discussed. The Games-Howell test was used to break down the main effects based on its conservative nature and power with moderate to large and potentially unequal sample sizes (Field, 2009). *T*-test analyses were used to determine significant differences in academic performances for identified subgroups.

To further investigate the impact of social integration on academic performance, the data was categorized into low, moderate, and high categories in Chapter 5 based on composite social integration scores. Descriptive and inferential statistics were explored for differences between categories. Hierarchical moderated regression was again employed for each category and beta values were used using the standardized value as different scales were used for independent variables.

Summary

Chapter 3 presented the study and design methodology planning elements. Participants proposed for selection were identified including a discussion about the data collection procedures. The next section identified and operationalized the independent, dependent, moderating, and control variables as guided by the identified theoretical approaches. Finally,

description of the data analysis was then presented, including a strategy to meet the assumptions allowing the use of regression modeling.

CHAPTER 4

RESULTS

The purpose of this study was to investigate the relationship between academic and social integration on the academic performance of first-generation freshmen students. Furthermore, the study sought to investigate if gender, race, and socioeconomic status moderate the relationship between academic and social integration and the academic performance of first-generation freshman students. Finally this study sought to develop academic and social integration profiles to investigate if there are differences among the profiles with respect to academic performance. Using a post-facto research design with archival data, the research questions were as follows:

1. What effect does academic and social integration have on first semester grade point average of first-generation students?
2. Do (a) gender, (b) race/ethnicity, and (c) socioeconomic status moderate the relationship between academic and social integration and grade point average of first-generation students?
3. Is there a difference in first semester grade point average of first-generation students based on academic and social integration profiles?

This chapter is organized into three sections. The first section offers descriptive statistics on the identified variables. The second is a presentation of the steps taken to ensure suitability of

OLS regression analysis followed by a discussion of the inferential results. The third section provides a summary of the chapter.

Descriptive Findings

The archival data in this study were collected from a four-year Midwest regional state university. The participants included first-year, first-generation students enrolled full-time who completed at least two semester of college during the 2013-14 academic year. Survey information was collected in fall 2013 using Map-Works, a system designed to provide early warning interventions for students at risk of academic struggle, social isolation, and potential dropout (EBI, 2014). Table 4 presents the descriptive findings.

Table 4

Descriptive Findings

Variable	*n*	*M*	*SD*	Range	
				Min/Max	Actual
Fall 2013 GPA	1204	2.54	1.03	.00–4.00	4.00
Total academic integration score	1204	23.38	4.17	4–28	24
Total social integration score	1204	16.35	4.24	3–21	18
Gender					
Male	447 (37%)	--	--	--	--
Female	757 (63%)	--	--	--	--
Race					
White, non-Hispanic	756 (63%)	--	--	--	--
Non-White	448 (37%)	--	--	--	--
Socioeconomic status (EFC)	1204	$5,167.31	9,922.56	$0.00–$82,859.00	$82,859.00
High school GPA	1204	3.04	.47	1.41-4.00	2.59
Unmet financial need	1204	$2,198.43	3,517.18	$0.00–$27,244.00	$27,244.00

A total of 1,204 eligible students were selected during the fall 2013 semester. Eligible students were classified as full-time, first-time, and first-generation. First-generation status is defined as neither parent having a bachelor degree. The continuous dependent variable, fall 2013 GPA, ranged from 0.00 to 4.00 (M = 2.54, SD = 1.03) reflecting substantial variability in academic performance.

Student integration profiles served as a series of dichotomous independent variables for this study. Academic integration responses were combined to create a cumulative academic integration score. Academic integration scores ranged from 4 to 28 (M = 23.39, SD = 4.17). This was repeated for social integration responses to create a cumulative social integration score. Social integration scores ranged from 3 to 21 (M = 16.36, SD = 4.23). Using the cumulative academic and integration scores, students were classified into 1 of 4 integration profiles: (a) high academic integration, high social integration (n = 366); (b) low academic integration, high social integration (n = 237); (c) low academic integration, low social integration (n = 441); and (d) high academic integration, low social integration (n = 165).

Race/ethnicity was used as the first dichotomous moderator variable in this study. Of the eligible students who participated, 756 (63%) identified as White, non-Hispanic and 448 (37%) as non-White including Hispanic (n = 63), American Indian or Alaska Native (n = 2), and Black or African American, non-Hispanic (n = 383). There were no students who identified as Hawaiian or Pacific Island ethnicity who participated in this study. This non-White population in this sample is slightly larger comparted to the comprehensive racial identity of students on this campus as discussed in Chapter 3. The self-identified gender of the participants was used as the second dichotomous moderating variable and included 447 men (37%) and 757 women (63%). The number of women in this study was slightly larger than the general student body

demographic where women constitute 54% of the population. The third moderating variable was socioeconomic status as identified by expected family contribution, operationalized as a continuous variable. Students' expected family contributions ranged from $0.00 to $82,859.00 (*M* = 5,167.31, *SD* = 9,622.56). This broad range and standard deviation value indicate substantial variability with this factor that reflects the 92% of the full-time beginning undergraduate students enrolled in this institution who are reported to receive financial aid, 53% in the form of a Pell Grant (NCES, 2014).

To help minimize outside factors that may influence the relationship between integration and academic performance as discussed in Chapter 2, two continuous control variables were used in this study. The first, student unmet financial need, was used to give consideration to students who experienced financial stress in college and consequently struggled to have the time, or the personal capital, to adequately engage either academically or socially (Cabrera et al., 1992; Goldrick-Rab et al., 2009). Unmet financial need for students in this study ranged from $0.00 to $27, 244 (*M* = 2,198.43, *SD* = 3,517.18). This variability reflects the large amount of students who are eligible for financial assistance as previously discussed. The second continuous control variable, high school grade point average, had a range from 1.41 to 4.00 (*M* = 3.04, *SD* = .47).

Inferential Findings

The intent of this research was to investigate the relationship between academic and social integration on the academic performance of first-generation freshmen students. Additionally, this study sought to examine if gender, race, and socioeconomic status moderate the relationship between academic and social integration and the academic performance of first-generation students. Finally, this study sought to develop academic and social integration profiles to investigate if there are differences among the profiles with respect to academic performance.

The method of least squares, specifically multiple regression, was selected to examine the relationship and to fit a model to predict the dependent variable (academic performance) based upon a set of independent variables (integration scores, gender, race, and socioeconomic status). This method is appropriate given the dependent variable was continuous and multiple independent variables that were either continuous or dichotomous.

Data Suitability for Regression Analysis

As with any inferential statistical procedure, it is important to ensure that the data appropriately conform to what is necessary for running that particular analysis. OLS regression has its set of assumptions that must be met within reasonable parameters. In the following subsections, I explore these assumptions and the procedural tests used to examine the data and the legitimacy of results drawn from the analysis.

Normality. As a first test, the data were investigated for skewness and outliers that may influence the validity of the findings. The dependent variable (fall GPA) indicated a negative skew (-.77) which could be expected given the large number of students with a 0.00 grade point average at the end of the fall semester. Both log and square root transformations were explored as well as the removal of students with 0.00 GPA however, there was no difference in the significance of results so the original dependent variable data was use for ease of interpretation.

The exploration of the independent variables using skew and kurtosis, also indicated a need for further consideration. Expected family contribution was positively skewed (3.41) and positively kurtotic (16.17). This is not surprising given that students have a large range of financial expectation from their family, ranging from $0.00 to $82,859.00 which influenced the skew, a large number of students (n = 507) having no family financial contributions expected which influenced the kurtosis. Unmet financial need was reported as positively skewed (2.15)

and positively kurtotic (5.37). This is also not surprising since students have a large range of unmet financial need, from $0.00 to $27,244, of which over $10,000 (*n* = 69) influence the positive kurtosis. Additionally almost 33% of the sample had $0.00 unmet financial need (*n* = 391) which influenced the positive kurtosis. Both log and square-root transformations were applied to each variable, however there were minimal change in the regression results. Therefore, the original, non-transformed variables were used for ease of interpretation.

Collinearity. Tests of the data for collinearity were conducted beginning with the examination of a bivariate correlation matrix presented in Table 5. Field (2009) suggested correlations using Pearson's *r* near or above .8 to be considered highly suspect for collinearity. In this study, all correlations fell at .50 or below, considered well below the standard, suggesting the data appeared appropriate for regression analysis.

Table 5

Correlation Matrix Using Centered Values

Variable	1	2	3	4	5	6	7
1. Total academic integration score							
2. Total social integration score	.50*						
3. Gender	.05	-.12*					
4. Race	-.40	-.01	-.01				
5. SES	.03	.01	-.03	-.25*			
6. High school GPA	.10*	-.02	.18*	-.33*	.16*		
7. Unmet financial aid	-.11*	-.12*	-.04	.17*	-.18*	-.22*	
8. Fall term GPA	.23*	.03	.13*	-.32*	.20*	.50*	-.39*

*p<.001, two-tailed.

The correlation matrix did reveal several significant relationships, all at $p < .001$, two tailed. A significant positive relationship was found between academic integration and social integration ($r = .50$), high school GPA ($r = .10$), and fall term GPA ($r = .23$). Fall term GPA was also significantly positively correlated with gender ($r = .13$) and expected family financial contribution ($r = .20$). Additional positive correlations were found between gender and high school GPA ($r = .19$) and fall GPA ($r = .13$) as well as between race and unmet financial need ($r = .17$). Finally, positive correlations were discovered between expected family contributions and high school GPA ($r = .17$) and fall GPA ($r = .20$) as well as between high school and fall GPA ($r = .50$).

Negative significant correlations were found between academic integration and unmet financial need ($r = -.11$) as well as between social integration and gender ($r = -.12$), and social

integration and unmet financial need (r = -.12). Race was also significantly negatively correlated with expected family contributions (r = -.25), high school GPA (r = -.33) and fall GPA (r = -.32). Finally, unmet financial need was significantly negatively correlated with expected family contributions (r = .18), high school GPA (r = -.22), and fall GPA (r = -.39).

When considering interaction variables used to answer Research Question 2, consideration was given to issues of multicollinearity between the main variables. Field (2009) supports the use of centering the variables to adjust for these challenges. All values reported reflect this adjustment.

As a further check for collinearity, variance inflation factors (VIF) and a tolerance statistic for each variable were calculated. VIFs for each variable (not shown) fell well below the acceptable threshold of 10 (Bowerman & O'Connell, 1990; Myers, 1990) and all tolerance levels fell above .2 (Menard, 1995) for each variable, suggesting there are no additional issues of multicollinearity biasing the model. Additionally, exploration of variance proportions using Eigenvalues and the condition index of each variable additionally confirmed no issues of excessive collinearity. Finally, block step regression was conducted, removing social integration to see if the variable results remained largely the same given the high .5 correlation between academic and social integration. The analysis was also done removing academic integration, but keeping social integration in the partial and full models. The results were consistent for the remaining independent variables suggesting no further concerns for collinearity.

Residual Plots. Diagnostics of the residual plots as illustrated in Figures 12, 13, and 14 were used to help establish the validity of regression assumptions. Mahalanobis and Cook's Distance were used to search for cases greater than or equal to the critical value and values greater than 1 respectively and found none in this model. The average leverage was also explored

and found 28 cases that exceeded .018, three times the average (.006) used as a guide for seeking cases of concern (Stevens, 2002). Further inspection found these values to be only marginally higher than the acceptable range suggesting they would not have a large influence. The standardized DFFit and DFBeta each fell within normal ranges further suggesting there are no cases of concern influencing the model. Finally, the covariance ratios also confirmed there are no cases that influence the variance of the regression parameters.

Three visual resources were examined to further explore the data as suitable for regression analysis. As can be seen in Figure 12, the histogram suggested mild issues of skew and kurtosis. Figure 13, illustrates the P-P plot is tightly clustered around the line which is ideal. Finally, Figure 14 shows the scatterplot also suggested a pattern of data points though a cloud with no obvious pattern is optimal. Each of these factors supported further exploration for variable transformations as discussed in the previous section. Yet, as noted, there was not substantive impact on the regression results so the data were not transformed.

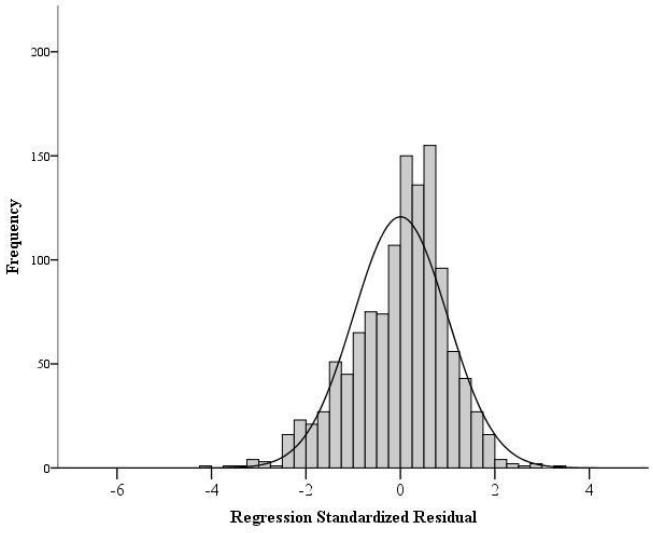

Figure 12. Histogram with fall term GPA as dependent variable.

Dependent Variable

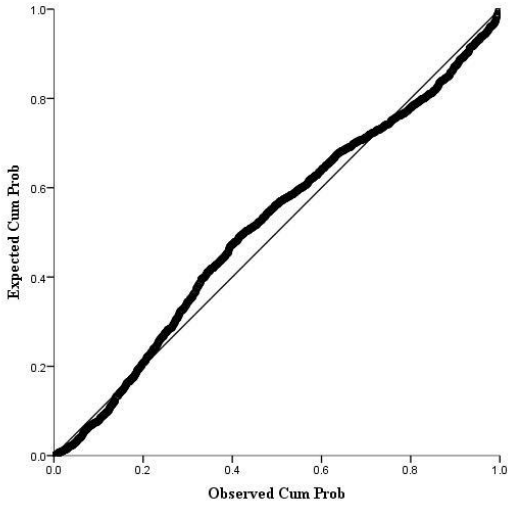

Figure 13. Normal *p*-plot of regression standardized residual with fall term GPA as dependent variable.

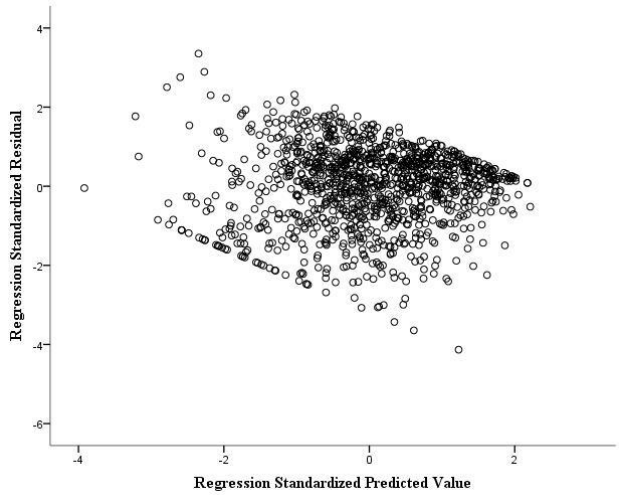

Figure 14. Scatterplot with fall term GPA as dependent variable.

Given that the data test suggested suitability for regression, hierarchical moderated regression was used to test for both direct effects and interactions. The variables were entered into the model in three steps to answer Research Questions 1 and 2. The two control variables

were entered in step one followed by the main effects (race, gender, and socioeconomic status). The third step entered two-way interaction terms.

Research Question 1

Table 6 shows the results of the regression analysis using fall grade point average as the dependent variable measure of performance. Beta values are reported using the standardized value as different scales were used for independent variables. The *F*-value for each model was highly significant ($p < .001$) with the full model explaining nearly 40% of the variance in the dependent variable.

Table 6

Hierarchical Moderated Regression with Fall Grade Point Average as Dependent Variable

Independent variables	Model 1	Model 2	Model 3
	β	β	β
High school GPA	.43***	.36***	.36***
Unmet financial need	-.30***	-.27***	-.27***
Academic integration		.20***	.21***
Social integration		-.10***	-.11***
Gender		.03	-.03
Race		-.14***	-.14***
Socioeconomic status		.05*	.05**
Academic integration * Gender			-.02
Academic integration * Race			-.04
Academic integration * Socioeconomic status			-.02
Social integration * Gender			.04
Social integration * Race			.00
Social integration * Socioeconomic status			.01
F-value	300.43***	107.72***	58.28***
Adjusted-R^2	.33	.39	.38

*$p < .05$, **$p < .01$, ***$p<.001$.

Research Question 1 inquired of the effect of academic and social integration on first semester GPA of first-generation students. It is necessary to consider Model 2 as the main effects

become inconclusive when evaluated using interactions (Jaccard & Turrisi, 2013). Model 2 indicates academic integration is a strong significant positive predictor of fall semester grade point average and social integration is a strong negative predictor of fall semester GPA ($p < .001$). Students indicating high academic integration can be expected to have a higher GPA than those who are not integrated into the academic experience. Inversely, students who report being highly social integrated will be expected to experience a lower GPA.

Research Question 2

Research Question 2 considers if gender, race, and socioeconomic status moderate the relationship between academic and social integration and fall semester GPA for first-generation students. Model 2 again is used to examine the main effects, namely that race is a strong negative significant predictor ($p < .001$) as well as socioeconomic status as a moderate significant predictor ($p < .05$) of academic success. Specifically, students who identify as non-White are less likely to experience academic success than students who identify as White. Additionally, students who indicate a higher socioeconomic status based on expected family contributions are likely to achieve a higher GPA in the fall semester. Gender does not appear to influence academic performance for first-generation students in the first semester.

With respect to the interactions, none of the interaction terms were significant. More specifically, there was no statistical evidence that any of the demographics, namely gender, race, and socioeconomic status, moderated the relationship between academic or social integration and term performance as measured by fall GPA. In other words, the demographic variables neither strengthened nor weakened the main effects.

Research Question 3

Figure 15 illustrates cumulative academic and social integration profiles as they were plotted and classified into four quadrants using the academic integration median (24) and social integration median (17). Each quadrant was labeled to include participants as I (n = 363), II (n = 236), III (n = 440), and IV (n = 165), mean GPA and standard deviation respectively. Research Question 3 considered if there are first semester grade point average difference for first-generation students based on their academic profiles. A one-way ANOVA was utilized to best control for a Type I error (Field, 2012).

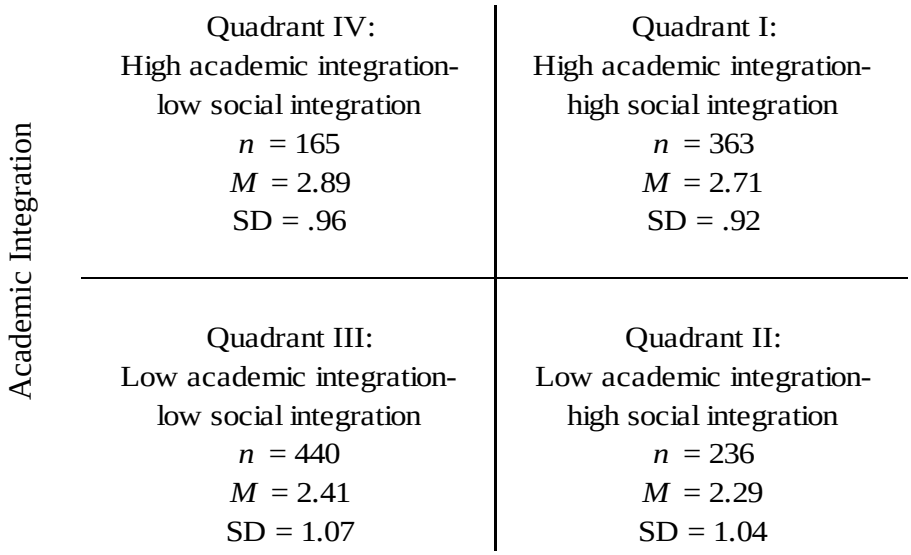

Figure 15. Social and academic integration profiles.

Table 7 presents the statistical results associated with Research Question 3. On average, students who reported higher academic integration in both Quadrant I (M = 2.71, SD = .92, n = 363) and Quadrant IV (M = 2.89, SD = .96, n = 165), experienced greater first-year academic success than those reporting lower academic integration in Quadrant II (M = 2.29, SD = 1.04, n = 263) and Quadrant III (M = 2.41, SD = 107, n = 440), regardless of their reported level of social

integration as low or high. Analysis was run using *t*-test comparisons to investigate for significant differences. Those in Quadrant IV had a higher average GPA than those in Quadrant I , $t(305.4) = -2.02$, $p = .04$, with a small effect size (Cohen's $d = .2$) suggesting that high social integration may negate the academic benefits of high academic integration.

Table 7

T-Test Comparison Results for Academic and Social Integration Quadrants

Variable	Quadrant I HAI/HSI	Quadrant II LAI/HSI	Quadrant III LAI/LSI	Quadrant IV HAI/LSI
Quadrant 2	-5.05*** (.4)	--		
Quadrant 3	-4.27*** (.3)	1.42	--	
Quadrant 4	-2.02* (.2)	5.96*** (.6)	-5.31*** (.5)	--

Note. *$p < .05$, **$p < .01$, ***$p < .001$, two-tailed. H = High, L = Low, AI = Academic Integration, SI = Social Integration. Effect size listed in parenthesis below *t* score.

However, given the sample size for Quadrant I was nearly double that of Quadrant IV suggests caution in interpretation. Similarly the sample size was nearly double when comparing students in Quadrant II and III whose average fall GPA were not significantly different. Those students reporting low academic integration/low social integration (Quadrant III) on average realized higher GPAs ($M = 2.41$, $SD = 1.07$, $n = 440$) than did those students with low academic integration/high social integration (Quadrant II) though the difference was not significant ($M = 2.29$, $SD = 1.04$, $n = 236$), $t(492.60) = 1.42$, $p = .158$. For students in Quadrant IV who reported low social integration and high academic integration ($M = 2.89$, $SD = .96$, $n = 165$) experienced significantly higher GPAs on average than those in Quadrant III with low academic integration ($M = 2.41$, $SD = 1.07$, $n = 440$), $t(325.97) = -5.31$, $p < .001$ with a moderate effect size (Cohen's

d = .5). A similar outcome was found for student in Quadrant I who reported high social integration and high academic integration (*M* = 2.71, *SD* = .92, *n* = 363). Namely, their mean GPA was significantly higher than Quadrant II students who reported low academic integration (*M* = 2.29, *SD* = 1.04, *n* = 236), *t*(457.99) = -5.05, *p* < .001 with a nearly moderate effect (Cohen's *d* = .4). Finally, students who had markedly opposite integration experiences could expect significantly different outcomes on average. Specifically students in Quadrant I (*M* = 2.71, *SD* = .92, *n* = 363) and Quadrant III (*M* = 2.41, *SD* = 1.07, *n* = 440), *t*(799.62) = -4.27, *p* < .001 with a small effect size (Cohen's *d* = .3) as well as those in Quadrant II (*M* = 2.29, *SD* = 1.04, *n* = 236) and Quadrant IV (*M* = 2.89, *SD* = .96, *n* = 165), *t*(369.80) = 5.96, *p* < .001 with a moderate effect size (*d* = .6).

Levene's test indicated the variances were significantly different *F*(3,1200) = 4.25, *p* = .005) and therefore violated the assumptions of homogeneity. In this case Field (2012) suggested using the Welch's *F* test which provides a more robust result of the equality of the means Additionally, Field suggested consideration of the variance ratio prior to considering data transformation. The variance ratios for each quadrant were nearly equal. This may be due to a large sample size that detected small differences in variances. Additionally, earlier discussion explored using transformation of the dependent variable and concluded that it had minimal impact on the results and would not be conducted with this data.

The ANOVA results indicated a significant difference between academic and social integration profiles on fall GPA using Welch's *F*(3,526.68) = 17.99, *p* < .001. The omega squared value indicated that the student integration profile only accounts for 4% of the variance in fall term GPA. Given the violation of assumption of variances, a Games-Howell test was appropriate to break down the main effects based on its conservative nature and power with

moderate to large and potentially unequal sample sizes (Field, 2009). The Games-Howell showed that students reporting high academic integration and high social integration experience significantly higher GPAs compared to those with low perceptions of their academic integration including those with both high ($p < .001$, $r = .4$) and low ($p < .001$, $r = .3$) social integration perceptions. Students reporting low academic integration and high social integration displayed significantly lower GPAs than those reporting high academic and low social integration ($p < .001$, $r = .6$) as well as those with high academic and low social integration ($p < .001$, $r = .5$). This again supports that students experience high academic integration can be expected to experience greater academic success than those without positive academic experiences regardless of students' self-reported social integration. There is some evidence to suggest that higher social integration may actually decrease the amount of academic success experienced.

Summary

This chapter began with the descriptive statistics for the variables in this study. The next section examined the suitability of the data for OLS regression. The subsequent section addressed the research questions with findings from this study using regression and ANOVA analysis. The final chapter of this dissertation will provide a discussion of the findings as well as implications for practice, limitations of the study, and opportunities for future research.

CHAPTER 5

DISCUSSION

The purpose of this quantitative study was to investigate the relationship between academic and social integration on the academic performance of first-generation freshmen students. Furthermore, the study sought to investigate if demographics self-identified by students as part of their identity including gender, race, and socioeconomic status moderate the relationship between academic and social integration and the academic performance of first-generation freshmen students. Additionally, this study sought to set the groundwork for future qualitative inquiry to examine in depth how the intersections of students' identities combined with meaning-making capacity that in turn influences students' accomplishments. Finally, this study sought to develop a set of four academic and social integration profiles to investigate if there are differences among the profiles with respect to academic performance.

To explain the findings and their meanings, this chapter is presented in four sections. The first section reflects on the findings and their potential meanings. The section also integrates literature from Chapter 2 with respect to its alignment with the study findings and where the dissertation research extends the knowledge base. The second section presents the implications for both practice and policy. The third section considers the limitations of the study and links it to opportunities for future research. The final section provides a chapter and dissertation summary.

Results Reflection and Links to Previous Research

The focus of this dissertation study was to better understand the factors that influence student academic success. Given the increasing numbers of students enrolling in postsecondary education, yet a disproportion rate of first-generation students compared to non-first-generation students who fail to graduate, such a study is an important one for both scholarly and practical reasons. A substantial investment of resources and programs target the support of first-generation students and research to inform such investment is needed. The failure of these students to persist to graduation comes at an increasing cost to higher education institutions and taxpayers.

As presented in Chapter 2, a number of factors impact first-generation student success in college including a lack of academic and social preparation during their high school years (Ammons, 1971; Astin, 1973; Blanchfield, 1971; Grieve, 1970; Kamens, 1971; Jafe & Adams, 1970; Kuh et al., 2005; Pascerella et al., 2004; Pennington, 2004; Tinto, 1975; Warburton et al., 2001), unique challenges experienced by historically marginalized racial groups that often are also first-generation students (Cho et al., 2008; Keels, 2013; Kim & Sax, 2009; Lundberg et al., 2007), socioeconomic issues (Heisserer & Parette, 2002; Housel, 2012; Inman & Mayes, 1999; Lohfindk, & Paulsen, 2005; Orbe, 2004; Pascarella et al., 2004; Sommers et al., 2004; Stephens et al., 2012), and students' experiences once enrolled in college (Astin, 1970, 1985; Pascarella, 1985). Recognizing that students have multiple identities, including self-identified demographics and cultural capital that influence how they frame their experiences, this study focused on the range of integration self-reported by first-year first-generation students as they intersect with key demographic factors. The intent was to better understand the particular dynamics that influence academic success for a population historically considered at risk. This research strives to inform

how higher education resources can be better deployed to facilitate the academic success of first-generation students.

Student Factor Impacts on Academic Performance

To explore if higher education really provides an equal opportunity to all students, multiple pre-existing student factors were considered for this study. Consistent with Astin's I-E-O (1977) model, Pascarella's (1985) college impact model, and Tinto's (1993) model of institutional departure, as discussed in Chapter 2, pre-existing student characteristics including high school academic performance, unmet financial need, socioeconomic status, race, and gender were investigated. All of these factors with the exception of gender were significantly connected to students' academic success.

High school grade point average. First, high school grade point average was a positive indicator of how students could be expected to do in college. In this study, those who performed well in high school demonstrated academic success in higher education. This supports the idea that the best predictor of future behavior is past behavior, which in turn supports the widely popular practice by many institutions to consider high school GPA in the admissions process. This is consistent with the literature using GPA to predict college retention (Ammons, 1971; Astin, 1973; Blanchfield, 1971; Grieve, 1970; Kamens, 1971; Jafe & Adams, 1970; Tinto, 1975). Additionally, high school grade point average as shown in the correlation matrix in the previous chapter was positively correlated to academic integration, though not significantly connected to social integration. This suggests that students who are woven into the academic culture in high school may realize better academic performance in college. In other words, habits of academic inclusion and integration that begin prior to college enrollment may translate into higher education classrooms, although that was not directly investigated for this study.

This potential high school to college academic habit connection may be reflective of students' successful experiences in the classroom which gives them a sense of familiarity with academic expectations and how to perform successfully to meet these expectations. Some caution, however, must be noted in the interpretation of high school grade point average in this study. Specifically, the rigor of high school courses and specific cultural experiences in the schools that were attended were not considered. Students may have experienced a range of coursework and academic experiences that influenced their college preparation differently. Research done by ACT (2013), for example, identified first-generation students in particular who completed the recommended core curriculum as more likely to be better prepared for higher education coursework. In general terms, though, this study's finding with high school GPA is consistent with previous research, suggesting that the consideration of students' academic preparation in high school is predictive of how they would fare academically early in their college enrollment.

Unmet financial need. Second, unmet financial need in this study also aligned with previous research. Students with a greater level of financial stress demonstrated less academic success than their peers. Additionally, correlation matrix results showed that as unmet financial need increased, academic and social integration decreased. Furthermore, additional *t*-test analyses of White and non-White students (not shown) and level of unmet financial need revealed that non-White students were significantly more likely to have unmet needs than White students ($p < .001$), placing the former at an even higher disadvantage. Previous research attributes the negative effects of financial stress to activities such as work and family commitments that take students' time away from academic experiences (Leslie & Brinkman, 1988; Paulsen & St. John, 2002; Tinto, 1993). Students who have little choice but to give their

attention to pre-existing work schedules and activities outside the higher education culture are often left to weave their academic priorities around work and family demands. This increased demand on students' time, energy, and attention may pull students away from academic priorities accounting for the decrease in academic success.

Socioeconomic status. Similarly, the amount of expected family financial contribution as a proxy measure of socioeconomic status in this research had an influence on students' academic performance consistent with previous studies, though with conflicting results. Hamilton (2013) reported a trend of students in higher socioeconomic categories to have lower grades than their peers, though they were graduating ultimately at a higher rate. This dissertation study did not find similar results, instead discovering a significant correlation between those from lower socioeconomic categories having lower grades than their higher socioeconomic peers. These results are, however, in alignment with The Pell Grant Institute (2004) and other subsequent studies (i.e., Chen & Carroll, 2005; Mortenson, 2007; Tinto, 2010) that consistently found low-income students matriculating to graduation at a rate below those with higher socioeconomic status. Lower grades will inevitably lead some students ultimately to drop out or, at minimum, extend their college career.

Students with access to a greater amount of family financial resources often arrive with a greater amount of social capital that allows them to engage in social and academic situations more comfortably and ultimately support higher graduation rates. Conversely, students who come from families with potentially low economic resources may also have less social capital and available financial or family support to guide them through the challenges and unwritten rules during their higher education transition making academic success more challenging (Stephens et al., 2012). Given that students with low socioeconomic status were significantly

more likely to be non-White as evidenced by subsequent *t*-test analysis (not shown; $p < .001$) and have a higher amount of unmet financial need as noted earlier, the evidence continues to mount as supported by this study that the demands of students with notable financial stress are at a disadvantage upon enrollment in higher education but that those students who are non-White may be the most negatively impacted.

Race and gender. The model of multiple dimensions of identity (Jones & McEwen, 2000) additionally supports the exploration of race and gender, both factors considered in this study. Race was significantly associated with academic performance at the end of the first semester in college, indicating non-White student underperformance vis-à-vis their White counterparts. The more fine-grained *t*-test analyses discussed previously showing that non-White students are more likely to be from lower socioeconomic families and to have greater unmet financial needs reinforces the heightened challenges they confront with respect to academic performance. In other words, these indicators are undoubtedly contributing factors to the continued gaps between White and non-White academic performance and downstream college completion rates and thus worthy of attention (Keels, 2013).

With respect to gender, it was the only variable that was not significant in the models. It did not appear to matter whether a student was male or female in the study with respect to differences in academic performance at the end of the first term. The research literature suggests, however, that non-White male students, particularly African-American, are less academically successful than non-White female students (Lundberg et al., 2007). Subsequent *t*-test analyses (not shown) revealed a significant difference in academic performance between non-White men and women, with men evidencing the lower performance ($p < .01$). This finding suggests that

there may be especially acute needs to support the success of non-White men as a means of improving the accrued benefit of a college education and degree.

Some research suggests that women will fare better than men in degree completion, although only slightly (NCES, 2012). The results of this study may serve as an indicator that such a finding is becoming less prevalent, at least when not examined at the sub-population level. With more opportunities for involvement, engagement, and integration over time, the broader achievement gap between men and women may be declining until combined with other factors such as race or socioeconomic status.

In closure to this subsection, the research findings affirm that first-generation students are not a monolith; evidence is provided that nuances performance based on academic preparation, race, gender, and socioeconomic factors. While each of these characteristics can be explored using a silo approach, it is the combination of factors, supported by student identity development theory (Erikson, 1968; Jones & McEwen, 2000; Reynolds & Pope, 1991), that give the greatest insight to those consistently identified as at risk of academic struggles. However, identifying students as at risk is only the first step in striving to increase the academic success and graduation rate for first-generation students. Once enrolled, attention must be given to the opportunities and experiences that shape their progress.

Academic and Social Integration Impacts on Academic Performance

Astin's (1977) I-E-O model explained that the environment, including students' experiences, was influential in student outcomes. As predicted by the literature (Pacarella, 1985; Tinto, 1975, 1993), academic and social integration experiences were found to be highly significant in this study. Furthermore, student academic and social integration was positively

correlated suggesting that students who were more academically integrated also tended to be more socially integrated.

While these factors may influence each other, caution must be taken not to presume causation. The process of achieving integration, both academically and socially, is similar, which may explain how students who engage successfully in one area are able to transfer the skills to another. For example, students who are able to recognize a social opportunity and engage appropriately, find themselves involved in the experience and are more likely to become socially integrated. The same behavior and patterns might be more easily transferred to the academic integration domain when successfully experienced initially and repeated over time. Or the relationship link could be in reverse: students who are more academically integrated may be more likely to transfer those skills to the social arena. In summary, it could be mutually reinforcing phenomena.

Hurtado (2008) noted that academic and social experiences can be normative or formally structured by the institution and both provide value. Tinto's (1993) research indicated that the positive and integrative experiences reinforce persistence through increased commitment to the institution and ultimately to the goal of completion. This is also consistent with early cognitive-behavioral theories (Beck, 2011) and Astin's (1970, 1985) theories of student engagement.

Academic and social integration were also negatively correlated with financial stress (i.e., unmet financial need) in this study. Those who experienced high academic or social integration were found to have a lower level of financial stress. Conversely, those students who experienced high financial stress were likely to have lower academic and social integration. Astin (1985) considered socioeconomic status a pre-existing characteristic that has the potential to shape student outcomes. Pascarella (1986) agreed, noting that pre-college characteristics and

integration are direct influences on learning and cognitive development. However, in this study, socioeconomic status was not significantly correlated with either form of integration.

As first-generation students consistently experience a higher rate of financial stress, it is possible that even the best of integration experiences, socially and academically, may not be enough to off-set their initial disadvantage. If financial stress can be managed or reduced, however, it appears to have noted potential for increasing at least academic performance. At least in this study as discussed in the next section, it did not appear that financial stress as defined as unmet need moderated, or exacerbated, the link between either form of integration and academic performance.

High school grade point average as per the correlation matrix was positively associated with academic integration, although not social integration, in this study. Students who were more academically integrated into their environment were more likely to be academically successful in higher education, consistent with Kuh (2005) and Tinto (1975). The amount of time students invest in academic opportunities such as studying or service learning highly influences students' academic performance, even despite pre-existing characteristics (Kuh, 2005).

Additionally, those who did well in high school academically were also more likely to be more academically integrated in college as well. This was also consistent with research conducted by Astin, (1993) Cheng (2000), and Hu and Kuh (2002). This may be explained by the academic preparation of high school students who also do well in higher education. Students who engage in courses that require academic rigor prior to enrolling in higher education may have experienced the skill sets needed to also successfully engage in college. Conversely, students who are underprepared upon college enrollment may find themselves without the social capital to seamlessly invest their energies in academic opportunities.

Turning now to the regression results, academic and social integration were both significant factors in explaining the model set forth in this study, although academic integration had the larger coefficient. This is consistent with Prospero and Vohara-Gupta (2007) who found academic integration in particular had the highest positive contribution to academic achievement than any other variable, particularly for first-generation students. This was also previously confirmed by Pascarella and Terenzini (1978) and later by Kuh (2008), who found that high academic engagement increased grade point average. Furthermore, Astin (1993) and Kuh (1993, 1995) found that high social engagement served as a supportive force for students fostering leadership skills, academic development, problem-solving skills, and self-esteem. Yet in this study, social integration was negatively associated with academic performance while academic integration was positively associated. This result suggests that it may be that high social integration, operationalized in this study as the combination of items measuring the degree to which a student felt like they belonged, fit in, and were satisfied with their social life on campus, is a detriment to academic performance.

Further exploration of these results was warranted given the finding for social integration and the normative belief held by some that social integration should have a positive impact on student performance. Table 8 below reports descriptive results for social integration into four categories, White men, White women, non-White men, and non-White women.

Table 8

Descriptive Findings for Men and Women Subpopulations-Social Integration

Subpopulation	*n*	*M*	*SD*	Range	
				Min/Max	Actual
White Men	279	16.94	3.94	5-21	16
White Women	168	17.14	3.77	6-21	15
Non-White Men	477	16.05	4.32	3-21	18
Non-White Women	280	15.79	4.52	3-21	18

As can be seen, the descriptive data reveals social integration scores had a slightly broader range for non-White students (3 to 21 for both men and women) than White students (5 to 21 for men, 6 to 21 for women). The average social integration score for White women followed by White men, non-White men, and finally non-White women. Subsequent *t*-test analyses (not shown) revealed mean academic performance differences between men and women ($p < .001$). More specifically were differences between White men and White women ($p = .005$), non-White men and White women ($p = .004$), White men and non-White women ($p = .001$), and non-White men and non-White women ($p = .001$) when considering academic performance at the end of the first term. These deeper analyses indicate some powerful issues that may be at work and that differentially impact men and women with respect to the influence of social integration.

Turning to the literature, previous scholarship provides some insights. Pascarella and Terenzini's (1980) study, for example, concluded that women were more impacted by social integration than men. However, in more recent research, Kim and Sax (2009) found male

students more likely to be engaged in academic activities, including classroom interaction that promoted academic integration more than female students. Additionally, this led to greater academic gains for men versus women. Pascarella and Terenzini (1979) classified academic faculty relationships as social integration in an early study that also had positive influence on freshman persistence.

Gloria, Robinson-Kurpius, Hamilton, and Wilson (1999) found that African American students who reported higher levels of social integration is associated with positive academic persistence decisions, a sense of fitting in a predominantly White institution comfortably, and less academic stress. Gloria, Castellanos, Lopez, and Rosales (2005) found similar results among Latino students who perceived themselves as being highly socially integrated also experienced greater academic success than their peers with lower levels of perceived integration. Rienties, Beausaert, Grohnert, Niemantsverdriet, and Kommers (2012) looked more closely at the differences in ethnicity that impact academic performance and found social adjustment was negatively related to study performance in non-dominant student populations.

While the literature examining integration of historically under represented populations in predominantly White institutions is sparse, these findings are consistent with Tinto (1975, 1993), who historically conceptualized that academic and social integration influence a student's departure decision. This research suggests that beyond race and cultural influence, gender has an additional layer of impact on integration and ultimately retention as well as graduation. Previous research literature, combined with the findings of this study, including the subanalyses above, suggests an even greater complexity among variables than was explored in the moderating variable investigations where no significance was found, a topic discussed in the next section.

Moderating Relationships

While historical literature suggests that race, gender, and socioeconomic status influence how students experience social and academic integration, there was no significance in this study between the interaction of the individual variables and integration. Burrill (2007) suggested that the evaluation of three- and four-way interactions become complex and tend to exhibit multicollinearity and multiple intercorrelations between product variables and the other variables included. He and others (Cohen, Cohen, West, & Aiken, 2013) suggested a process of orthogonalizing the product and power terms which is based in matrix algebra and beyond the scope of this study. This lends to the consideration that the interaction may not be in the broad categories of race, gender, or socioeconomic status but in the multiple interactions that consider multiple variables.

As previously explained, this study found significant differences in how social integration impacts academic performance for first-year, first-generation students. While gender was not significant on academic performance in the broader sense, it was significant between men and women when considering social integration, specifically when examining the inclusion of race. A more recent meta-analysis of social integration (Rubin, 2011) focused on the impact of socioeconomic status and social integration as moderated by year of study, social class, gender, and diversity of social integration. Rubin (2011) discovered that similar experiences happen for students regardless of year of study and gender, however social class has an impact. Those students considered as working class tend to have lower levels of social integration.

Given that there is a historically strong negative correlation between non-White students and socioeconomic status, further exploration may be warranted. Ultimately, this suggests that a three-way interaction of social integration, race, and gender or a four-way interaction that

includes socioeconomic status may give further insight to better understand students' experiences and academic successes. Further, it is evidence that it is important to remember that students are not summed as any single demographic but require attention to the more specific identities that make them unique in order to facilitate academic success.

Integration Intersectionalities and Academic Performance

Students were sorted into four integration profiles using their combined academic and social integration scores: high academic/high social (Quadrant I), low academic/high social (Quadrant II), low academic/low social (Quadrant III), and high academic/low social (Quadrant IV). Results of this study found a difference in grade point averages for first-generation students based on their profile. Simply stated, students with high academic integration fared better academically than those with low academic integration. However, this study found that social integration interferes with academic success when combined with high academic integration.

To examine this result more deeply, a closer look at quadrant descriptives is necessary and shown in Table 9.

Table 9

Quadrant Descriptives

	Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Percentage Women	60%	53%	66%	76%
Percentage Men	40%	47%	34%	24%
Percentage White	63%	64%	62%	63%
Percentage Non-White	37%	36%	38%	37%
Socioeconomic Status	$5,067.53 ($9,167.62)	$5,633.26 ($8,440.39)	$4,935.66 ($10,458.03)	$5,338.06 ($9,916.61)
Unmet Need Mean (SD)	$1,724.98 ($2,844.72)	$1,938.59 ($3,510.06)	$2,784.58 ($4,028.73)	$2,048.65 ($3,200.14)
HS GPA Mean (SD)	3.06 (.48)	2.97 (.46)	3.02 (.46)	3.13 (.47)
Fall Term GPA Mean (SD)	2.71 (.92)	2.29 (1.04)	2.41 (1.07)	2.89 (.96)

Quadrant IV reflects students with high academic integration and low social integration scores. The data reveal more women (75%) than men (24%) and more White (63%) than non-White students (37%) in the study. The expected family contribution mean is $5,388.06 (*SD* = $9,916.61) and financial stress is reflected by unmet need which has a mean of $2,048.65 (*SD* = $3,200.14). Comparable are students in Quadrant I who scored with high academic integration but in contrast to Quadrant IV, demonstrated high social integration. In this quadrant, the descriptive data reveals more women (60%) than men (40%) and more White (63%) than non-White (37%) students in this category which is reflective of the total sample used in this study. The expected family contribution mean is $5,067.53 (*SD* =$ 9,167.62*)* and unmet financial need

mean is $1,724.98 (*SD* = 2,844.72*)* which also demonstrates financial stress and socioeconomic status comparable to the study sample.

The students in both quadrants demonstrate comparable demographics but there is a notable difference in the mean fall grade point average. Though both sets of students reported high academic integration, those with lower social integration demonstrated greater academic success (2.89) than those with high social integration (2.71). This suggests that although students were comparably prepared upon admission and had experiences once enrolled that ensured successful academic integration, those with higher levels of social integration experienced a negative academic performance effect.

A similar effect happened between students in Quadrants II and III. In Quadrant II, the descriptive data also reveals more women (53%) than men (47%) and more White (64%) than Non-White (36%) students in this category. The expected family contribution mean is $5,633.26 (*SD* = $8,440.39) and the unmet financial need mean is $1,938.59 (*SD* = $3,510.06) which also demonstrates financial stress and socioeconomic status comparable to the study sample. Quadrant III reveals similar descriptive data as there are more women (66%) than men (34%) and more White (62%) than Non-White (38%) students. The expected family contribution mean is $4,935.66 (*SD* = $10,458.03) and the unmet financial need mean is $2,768.58 (*SD* = $4,028.73) both of which are slightly higher when compared to Quadrant II but comparable to the study sample.

Again, despite similar academic preparation and demographics, students with perceptions of higher social integration did not perform as well academically (2.29) as those with low social integration scores (2.41). Of greater concern is that students with low perceptions with academic integration, despite their perceived levels of social integration, demonstrate less academic

success than those with high perceptions of academic integration. These students are at greater risk for institutional departure (Tinto, 1993).

It is also noteworthy that there is a difference of the standard deviation for the composite scores. Social integration has a larger standard deviation or data spread than academic integration (recognizing that academic integration has a greater data range overall), which suggests students view how they integrate socially and academically as different. To better understand the impact of social integration on academic performance, students' social integration scores were divided into low (1-7), medium (8-15), and high (16-21) categories. Hierarchical moderated regression was completed for each category. Significant results, as shown in Table 10 occurred when considering the level of social integration a student was experiencing. Beta values are again reported using the standardized value as different scales were used for independent variables. The *F* value for Model 1 was moderately significant ($p = .006$), and highly significant for Models 2 and 3 ($p < .001$). The models explained 35%, 32%, and 41% respectively of the variance in the dependent variable which is comparable to the model using the complete data set.

Table 10

Moderated Regression Based on Social Integration Using Fall GPA as Dependent Variable

Independent Variables	Model 1: Low Social Integration	Model 2: Moderate Social Integration	Model 3: High Social Integration
	β	β	β
High school GPA	.41*	.30***	.38***
Unmet financial need	-.28	-.30***	-.26***
Academic integration	.05	.05	.28***
Social integration	-1.48	-.05	-.17**
Gender	-2.54	-.38	-.14
Race	.67	.08	-.07
Socioeconomic status	-.14	.20	.12
Academic integration * Gender	.73	.43	-.53*
Academic integration * Race	-.73	-.22	.05
Academic integration * Socioeconomic status	-.05	-.15	.24
Social integration * Gender	2.15	.07	.69*
Social integration * Race	-.06	-.09	-.12
Social integration * Socioeconomic status	.13	.03	-.31
F-value	2.92**	12.24***	46.07***
Adjusted-R^2	.35	.32	.41

*$p < .05$, **$p < .01$, ***$p < .001$.

In this analysis, several new findings are revealed. First, high school GPA is the only significant positive factor for students with low social integration ($p < .05$). For students with moderate levels of social integration, high school GPA is also positively significant ($p < .001$) however socioeconomic status is an added negative significant factor ($p < .001$). In contrast, for highly socially integrated students, high school GPA continues to be a positive significant factor ($p < .001$), and socioeconomic status continues to be a negative significant factor ($p < .001$) but academic integration demonstrates as a positive factor ($p < .001$) and social integration suggests a negative influence ($p < .01$). Further, two moderating effects are evidenced in Model 3. First, academic integration demonstrates negatively when moderated by gender ($p < .05$). Additionally, social integration is positively moderated by gender ($p < .01$).

The data suggest that the relationship between social integration and academic performance is positive at lower levels of social integration. However, when students move into higher perceptions of social integration there appears to be an inflection point where too much social integration starts to have a negative effect on performance, particularly for women. One can easily imagine such a circumstance. A student comes to college and finds a core group of friends that she relates to and who may place socializing at a premium vis-à-vis one's academic studies. Parties may start to predominate with the negative outcome of classes missed or less attentiveness to what it takes to do well on tests and papers. However, for a student who feels very isolated socially, she may also underperform. But as she develops a social network and sense of belonging, up to a point she greatly benefits from that sense of integration. Students potentially find a sense of social belong in college, at the cost of academic success where one's social life trumps the academic focus. Social integration may also be less of a developing

experience but instead one that students experiment with in different environments with varied degree of intensity and success (EBI, 2015).

Implications for Policy and Practice in Higher Education

The results of this investigation provide guidance for practitioners and administrators in higher education, particularly those engaged with first-year, first-generation students. Conclusions are suggested offering guidance to the use of resources when developing and implementing systems of support, particularly for those students who identify as first-generation. Based on the consistency within the historical research, the conclusions drawn from this study can be expected to transfer to students regardless of institutional type.

First, using program resources to apply to large identified subgroups is a start, but targeted supports must be considerate of complex identities. The results of this research suggested that race, gender, and socioeconomic status were significant demographics that influenced the predictive academic success of students in higher education. Gender became a particularly salient interaction that impacts first-year student success when it was examined with social integration and combined with academic integration. Abes et al.'s (2007) model of multiple dimensions of identity gives insight, and this study concurs, that the characteristics that students bring into higher education, combined with their contextual experiences and how they perceive the success of their experiences (meaning-making filter) once enrolled, has an impact on their academic success. With this understanding, leaders in higher education would do well to take first-year, first-generation student interventions and tailor them to particular subgroups to better facilitate their needs in terms of academic understanding and ease of social engagement in college.

This research suggests that non-White students are one subgroup of first-generation first year students who are not benefitting from a monolithic approach, particularly on a predominantly White campus. Instead it would be wise to recognize the social, economic, and cultural challenges as they impact African American, Hispanic, and other historically underrepresented populations that in turn promote variation in academic achievement. The encouragement to socially network prior to the start of the school year through orientation and bridge programming has demonstrated benefits in academic success and retention (ACT, 2006). Conley (2007) suggested creating a culture focused on intellectual development, specification of care knowledge, and skills for college, student, and instructional supports.

Pathways to College Network (2009) concurred with the identification of five key sources of support that promote students' success in higher education while meeting their academic and social support needs including emotional, instrumental, information, appraisal, and structural. For historically underrepresented students, the promotion of early networking opportunities provides emotional support to foster self-esteem and trust as students begin to build relationships with faculty in a progressive manner and peers in a small-learning environment. Instrumental support can be extended through the early promotion of enrollment in higher education courses offered to students prior to moving to campus. Instructors have the opportunity to provide content and discussion opportunities that promote higher-level thinking. Informational support can be provided through ensuring available mentoring that includes links to gaining social capital that students may be lacking. Appraisal support can occur through targeted and timely feedback of integration efforts both academically and socially. The use of assessment to evaluate what is happening for students both in and out of the classroom can provide insights to what gaps may exists that lend to academic failure. Finally, structural supports can take place in

smaller learning communities that may be tailored to meet common values and beliefs of individual cultures.

Greater attention needs to be given in elementary, middle, and high school to how students' academic careers are shaped with the understanding that early decisions potentially have long-term consequences. Support for pre-college programs such as Upward Bound, Talent Search, and GEAR UP engage both men and women in setting their sights on higher education enrollment. In light of declining funding for these federally financed programs, fraternities, sororities, and other campus-based affiliations have established summer and school year enrichment programs. Using established social structure to shape students proactively can serve to promote healthy social and academic integration, particularly when done during initial higher education experiences for first-year, first-generation students.

Long (2012) explored the relationship between fraternity and sorority members and academic performance. He found chapter involvement, engagement in academic activities, and part-time work were positively associated with academic performance. This becomes relevant as students become immersed into Greek affiliation during their first year of higher education and throughout their college career. The Greek affiliation on the campus used in this study included approximately 6% for men as well as women (U.S. News and World Report, 2014). This supports the research of Oncu (2015) who highlighted the behavioral components of engagement including active learning and paying attention. Those who feel confident to ask questions and engage in discussion were likely to have higher levels of engagement. The ability to immerse oneself in educational activities increases with peer support that promotes focused attention on academic learning (Oncu, 2015). This insight can be transferred into early residential life for students in the dorms as they begin to build their social networks. In smaller communities, such

as those naturally created with Greek and social affiliations, as well as dorm living communities, at risk students can be more quickly identified and engaged in supportive initiatives to shape positive behaviors of academic and social integration.

Second, there is strong support to focus on academic integration strategies early and then use students' levels of academic integration to guide social integration strategies. Based on the early work of Pascarella's (1985) college impact model and later work of Tinto's (1993) model of institutional departure as guides, attention must be paid to the characteristics that students bring into higher education upon enrollment and their initial institutional goals. Formal and informal experiences in students' academic and social systems provide the opportunities for engagement, involvement, and ultimately integration. While an argument can be made that a higher-education degree is designed to provide a holistic experience for students, to prepare them for competent participation in arts, philosophy, economics, sciences, and humanities, more students are faced with less academic opportunities , having fewer electives and a need to focus on core studies to achieve timely graduation.

To this end, academic integration must occur early in a student's higher education career to maximize educational success and core skills to transfer into more rigorous courses. How to academically engage students successfully should not be presumed as an innate skill for faculty. Given the generation gap between students and educators, attention must be given to the intention of purposeful student engagement. As different departments experience different limitations given budget and faculty resources, unique plans to target students in multiple disciplines may provide the greatest opportunities for academic engagement. This will likely require a consistent paradigm shift in higher education course facilitation from a lecture, listen,

and test approach that Friere (1968) referred to as a banking model, to one that more closely parallels experiential education both in and outside of the classroom.

Learning communities when implemented early and with attention to intentions of student engagement provide valuable opportunity for first-year student engagement, particularly for first-generation students who may be lacking social capital. Learning communities, defined as "purposeful restructuring of the curriculum by linking courses that enroll a common cohort of students" (Gebelnick, MacGregor, Matthews, & Smith, 1990, p. 5), give students the opportunity to engage in connected and collaborative learning. Pike, Kuh, and McCormick (2008) reported evidence to suggest that activities that engage students and faculty in formal and informal capacity, positively influence the relationship between learning community participation and learning outcomes. Rocconi (2011) presented further evidence specific to first-year students that participation in learning communities were positively related to student engagement which in turn is strongly related to educational gains. Additionally, Sidelinger, Bolen, McMullen, and Nyeste (2015) found that instructor rapport and connectedness were positively connected to students' out-of-class communication, self-regulated learning, and peer learning. The implementation of instructor training to promote effective relational communication in the classroom may in turn promote academic and social integration for students in multiple higher education settings.

While it is helpful to engage students who are otherwise disconnected socially, regardless of early academic integration, caution must be taken once students have achieved a moderate level socially. Failure to be sensitive to the negative impacts social integration promotion can have on GPA can ultimately do more harm than good. The use of early evaluation is helpful to

determine which students would benefit from targeted intervention, including those who may need raised awareness to taper their own involvement prior to doing unintentional damage.

Finally, the understanding that increased social integration has the potential to negatively impact academic success requires higher education leaders to increase their awareness of how and when to engage students in social integration development experiences. A careful evaluation of how students are faring academically and their levels of academic integration will give insight to the interventions that may serve as the greatest asset to promote additional academic success. While students' perceptions of membership, feelings of belonging, and satisfaction with social life (which comprise the social integration scores in MAP-Works) activities are commonly promoted on campuses, the more important goal is the combination of both academic and social integration.

Stronger partnerships between academic affairs and students affairs will strengthen the programming offered to students to promote success integration, academic success, and ultimately retention efforts. Ericksen and Walker (2015) suggested that supportive administration efforts allowing for interactions, discussion, and adaptation is a critical start. While historically these dimensions have functioned in silos, the increasing demand to meet a wide range of student needs requires the silos to expand in a collaborative versus a competitive effort. They add that advisory groups that include students and a planning team will provide the necessary insights to target key issues that may not surface in quantitative surveys that traditionally guide campus initiatives. The promotion of faculty-staff learning communities and team teaching has the ability to promote campus investment and assimilating current efforts into better designed approaches to partnership (Ericksen & Walker, 2015). Given the well-established success garnered through living-learning communities that promote high school to college transitions (Kinzie, 2010; Kuh,

2008) higher education leaders would find substantial return on the investment of resources in this approach.

Limitations

Use of archival data brings concern to the temporal saliency of the information selected. It can be presumed that given the constant changes in higher education service delivery, both in student services and academics, archival data should be cautiously considered within the context it was retrieved. Hence, the use of 2013 data may not be an accurate reflection of current student circumstance. Furthermore, considering the timing of the data analyzed, the use of fall data may be a premature indicator of future student success. As students are faced with geographical, schedule, social, and financial adjustments in a short period of time, spring data may more accurately reflect first-year integration experiences and students' adjustments to academic expectations.

Caution must also be given to the inherent risk in reduction of human stories to numeric data, potentially stripping away the experiences and level of grit that may influence students' perceptions of integration and demonstrated outcomes. The data used for this study present some limitations as demographic descriptors are classified as binary which must be used with caution in any generalization of results. The use of a quantitative study will only provide preliminary findings of moderating factors that influence students' experiences and academic performance. A qualitative approach in follow-up research will best serve to investigate the identity and experiences of any significant findings, particularly giving consideration to those whose race is coded as non-White, women, as well as for students who may identify themselves as gender non-binary.

Another limitation is that some learning and experiences may not be accurately reflected in the selection of these data. The use of GPA as an outcome may discount valuable informal learning. Additionally, even after controlling for high school academic performance and unmet financial need, other unmeasured pre-college factors may also be influencing student success or failure. It may also be that students' perceptions of integration at the moment of survey completion may lend itself to bias as a function of mood or proximal events.

Although the interaction of complex student variables was not found significant in this study, this may be attributed to unexplored variable combinations. Given that this study included seven variables that had the potential to influence academic performance, and several variables indicated independent significance, there was a vast potential of combinations to explore that fell outside the scope of this investigation. Further variable combinations to explore how demographic and experience interactions can explain student performance provides an opportunity for future research.

Finally, while the use of a Midwestern, four-year, residential institution allows similar institutions to consider the potential findings of this study, care must be taken to recognize the culture differences that may present for students on different campuses. Geography, institutional history, institutional size, degree of Greek life, and funding sources are a sampling of factors that may influence students' experiences and perceptions of integration. Particular caution should be taken when considering circumstances at private institutions, community colleges, and non-residential campuses for example.

Recommendations for Future Research

In the course of this study, multiple questions surfaced that planted the seeds for future inquiry. The focus of this study was solely quantitative in nature and based on a snapshot

moment in time. Understanding that humans are complex and every opportunity provides new experiences that can shape student academic performance, this section provides insights for future research.

First, the expansion of different institutional types would help this study's applicability to a broader scope. The use of a Midwestern public university may present some limits in the students available and their experiences to investigate. While replication over time in similar institutions would be of value, comparison of the results with other like institutions as well as varied institutional types would increase the value of determined conclusions. A broader scope of institutional type across multiple regions would increase the generalization of these types of findings.

Second, as previously indicated, the quantity of potential variable interactions was beyond the scope of this investigation. Another rich expansion of this research would be to limit the variables included and focus on the interactions of a select few. Given that academic preparation and financial stress are well established in the literature as factors of risk, these might be used to limit the eligible participants in the study from the beginning as oppose to using them as control variables. Better understanding of the particular sub-populations that are impacted differently by the interaction of academic and social integration may also provide richer insight to guide future programming.

Third, use of a survey to gather quantitative data is insightful but best serves as a starting point for future inquiry. There is a need to recognize that humans are complex. This study used student demographics as a starting point to identify trends in integration based on race, gender, and socioeconomic status. The limitation is that these are only demographics. Identity is multidimensional as it reflects how an individual recognizes him or herself as a person both

internally and externally. Using the multiple dimensions of identity models, demographics are part of this equation but also include relativity to differences, cultural identity and values, life experiences, current situational experiences, relationships with others, future planning, and ongoing personal development. One's core identity is created as these factors are inclusive in a holistic perspective. The demographics in this study were considered at a single moment in time and did not give acknowledgement to the fluidity of one's development as influenced by changing contexts.

Students use contextual influences, how they perceive the expectations of others, an internal sense of awareness, and understanding of their own identities to create meaning-making capacities. The insight to how students use their meaning-making filters might be best realized in future research using qualitative inquiry. Collecting information about the lived experiences of students with social or academic integration stories (positive or negative) would provide a deeper understanding of what relationships students perceive among their identities as well as how it developed during their higher education experiences. Understanding their lived experiences would be better suited to guide integration strategies to support academic success. This would additionally give the latitude to better understand the complicated demographics that students use in their identities and how this shapes the selection and integration of their experiences.

Fourth, future research might consider the impact of early career decisions for first-year, first-generation students on their perceptions of integration. Students who enter higher education with some awareness of areas of interest may move to find opportunities for informal and formal inclusion sooner than those who are undecided. This might occur through peer or faculty discussions, research, course selection, or professional development. Students who are able to

engage with others who share common interests may perceive being socially or academic integrated at a higher level than students who have less focused interests.

Finally, the results of this study suggest those with higher academic integration have a greater amount of academic success at stake with the increase of social integration, particularly women. Future research with focused data that explores specific experiences, such as for women, would add to the understanding of how to best target specific groups of students. While there is some evidence that the gender gap between men and women to access higher education is decreasing, continuing to consider how their experiences differ once enrolled would deepen understanding of integration processes and outcomes. Particular attention might be given to subgroups of women based on race and socioeconomic status as supported in this study. Just as first-generation students do not benefit from being considered as a monolith, women have unique experiences that may influence their particular needs for support in pursuit of academic excellence.

Summary

This chapter began with a discussion and reflection of the findings in this study. The implications for policy and practice were presented followed by the limitations and opportunities for future research. This study provides a contribution to the literature as it offers a deeper understanding of first-year, first-generation students who are too frequently classified as a monolith. It gives evidence that students' identities are relevant to how they engage in academic and social integration that lends to their academic success, particularly when considering race, gender, and socioeconomic status. Finally, it provides the groundwork for future qualitative research to better understand the lived experiences of first-year, first-generation students that shape higher education initiatives.

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