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Abstract

This dissertation examined predictors of retention and graduation for first-generation (FG), first-year students at a selective, private, residential university in the northeastern United States. The theoretical framework was Bean and Eaton's (2000, 2001/2002) Psychological Model of College Student Retention. The purpose of the study was to test the Bean and Eaton model and ascertain how students' entry characteristics, experiences, psychological outcomes, attitudes, and intent to return impacted retention and graduation outcomes. Previous research shows that FG students face challenges in persisting (Cataldi et al., 2018; Choy, 2001; Ishitani, 2016); yet it is through graduating from a prestigious four-year institution that they become positioned to realize the personal and life goals that led them to enroll in college (Darling & Smith, 2007; Longwell-Grice et al., 2016). This study was conducted at a private, residential, research university. Data came from institutional records and a student survey. An exploratory factor analysis accounted for most of the survey item variation. Path models demonstrated good fit to the data. Campus experiences impacted psychological outcomes, which—along with importance of graduating—impacted institutional commitment and indirectly, outcomes. Student racial/ethnic identity directly impacted retention, and family stress directly impacted four-year graduation. The study implies that institutions serving FG students should facilitate GPA and progress through academic support, positive engagement with faculty, and collaborative learning. Results also suggest that positive peer interactions in and out of class, in an environment free of racism and discrimination, with a demonstrated institutional commitment to diversity will increase the persistence of FG students. Institutions should leverage research to better understand their FG students to enact supports and environments that are most conducive to their success.

FIRST-GENERATION COLLEGE STUDENT BACCALAUREATE ATTAINMENT:
INVESTIGATION OF A PSYCHOLOGICAL MODEL OF COLLEGE STUDENT RETENTION

by

Timothy H. Wasserman

B.S., Syracuse University, 1988

M.S., Syracuse University, 1998

Dissertation

Submitted in partial fulfillment of the requirements for the degree of
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Syracuse University

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Chapter One: Introduction

Importance of Higher Education

The advantages of college attendance and completion are multifaceted and manifold. In general, postsecondary attenders and completers reap not only financial gain but also non-monetary benefits including personal achievement and fulfillment, social involvement and competence, and a heightened ability to exercise self-determination (Oreopoulos & Petronijevic, 2013). Upward mobility in pursuit of economic success—an aspect of the American Dream—is much more likely to occur for college graduates than nongraduates (Urahn et al., 2013), with the greatest gains accruing to college graduates who grew up in the lowest quintile of wealth (Urahn et al., 2012). In terms of achieving the American Dream, a college education is of fundamental importance.

Compared to those whose highest educational attainment is high school completion, baccalaureate degree recipients' annual income is over sixty percent greater (Baum et al., 2010; Kena et al., 2015; Ma et al., 2019; Zaback et al., 2012). The recovery from the U.S recession of 2008-2009 witnessed a large disparity in job opportunities for those with and without a college education, with those holding a bachelor's degree having a decided advantage in the post-recession job market (Carnevale et al., 2016). College attendance is also associated with reduced reliance on social and economic transfer programs, and with decreased incidence of incarceration and associated costs. Higher salaries accorded to college-educated workers leads to increased tax revenue for funding of public goods and other services (Baum et al., 2010; Ma et al., 2019; Oreopoulos & Petronijevic, 2013). Individuals who have attended or graduated from college report higher levels of job satisfaction, are much less likely to be unemployed, and are more likely to receive health and retirement benefits from their employer than those whose educational

attainment is high school or less. Additionally, they are less likely to be obese, or to smoke (Baum et al., 2010; Hout, 2011; Lleras-Muney, 2005; Ma et al., 2019). Civic engagement and democratic participation are positively related to educational attainment as measured through volunteering, voting, and newspaper readership (Baum et al., 2010; Dee, 2004). Even as the net price of a college education has climbed over the years—increasing loan debt and reducing access and affordability, especially for low-income students—higher education continues to offer a robust income return on investment (Baum & Ma, 2014; Emmons et al., 2019; Ma et al., 2019; Tinto, 2012). A recent analysis found that while positive income returns for baccalaureate attainers have remained steady over recent decades, ballooning costs of college and debt upon graduation has limited recent graduates’ ability to grow wealth despite higher incomes (Emmons et al., 2019). Thus, the financial returns on attaining a baccalaureate degree are greatest for those graduating with minimal or no debt.

Education for the Workforce

An educated workforce is critical to enabling the U.S. to compete successfully in the international economic marketplace. In an increasingly globalized world, the most valued members of the workforce are highly-trained and knowledge-focused individuals. Such individuals are usually college graduates (Committee for Economic Development, 2005; Tierney, 2006). The ability of the U.S. to meet growing domestic and international demand for talented employees is a function of its demographics as well as its national resolve to support individuals in accessing and graduating from college (Committee for Economic Development; 2005). With the baby boomer generation now at retirement age—but without a similarly sized generation of new workers to take their place—a strategy of boosting the number of college

graduates takes increased importance as a way for the U.S. to meet future demand for highly skilled workers (Tierney, 2006).

Absent a large increase in the size of the youth cohort, substantially growing the number of college completers requires an expansion of the number of high school graduates who are prepared for, and enroll in, college (U.S. Department of Education, 2009). However, the projected number of high school graduates in school year 2026-27—3.6 million—only equals the number of graduates in 2017-18 (Hussar & Bailey, 2018). Therefore, growth in the number of college graduates will necessitate a gain in college attendance and graduation rates. In the twenty-five year period since 1980, the proportion of U.S. high school graduates enrolling in college has risen more than twofold (though this growth has tapered recently) (Bound et al., 2010). Correspondingly, college enrollment as well as the number of baccalaureate completers has practically doubled. College graduation rates, however, have remained essentially flat over the same period—with the graduation percentage holding in the mid to upper 50s (Bound et al., 2010; Kena et al., 2015; Snyder et al., 2016; Supiano, 2011; Swail, 2014; The National Center for Public Policy and Higher Education, 2008; Tinto, 2012). Until recently, the U.S. led the world in the proportion of those of age 24 to 35 holding a 2- or 4-year college degree. A more recent assessment shows that the U.S. ranks 10th on this measure (The National Center for Public Policy and Higher Education, 2008). While the U.S. ranks near the top in proportion of the population holding a college degree, recent data show that other countries are closing the gap—mainly through increased support of college completion for younger adults. Such efforts could cause other countries to eventually surpass the U.S. in percentage of adults holding a college degree (Hull, 2012). The employers of the future will locate to where the highly skilled workers are, and these companies will also draw such workers to their offices and worksites (Tierney,

2006). If future economic growth and vitality are important to the U.S., the country and its postsecondary institutions will have to do a better job of enrolling high school graduates and retaining them through graduation.

Education for Citizenship and Democracy

The role of colleges and universities in the U.S. is critical not only to individual and national economic prosperity, but also to the advancement of democratic and civic ideals. Higher education was recognized as an instrument for democracy in the U.S. as far back as colonial times; colonies provided funding for the creation of higher education institutions (Rainsford, 1972). Thomas Jefferson argued for government-supported education so that citizens of varying economic means were able to learn about their rights and responsibilities, equipping them for effective self-governance (Institute for Higher Education Policy (IHEP), 1998).

Though Jefferson advocated for citizen education, it must be noted that not all individuals met the qualifications for citizenship. Such inequality privileged those who fit the narrow definition at the time. Consequently, this led to a lack of diversity within the academy and, due to the homogeneity of the student body, limited the educational experience for students (Gurin et al., 2002). The Morrill Act of 1862, establishing the nation's first land-grant institutions, expressly articulated an education to serve the dual purposes of liberal learning and technical specialization. The Act also sought to provide citizens with greater access to, and participation in, higher education (Segal, 2012). The second Morrill Act of 1890 provided support for additional land-grant colleges and universities. A number of the institutions founded in connection with second Morrill Act are now known as Historically Black Colleges and Universities (HBCUs) (Ostar, 1991; Rainsford, 1972). By providing for the founding of land grant institutions and broadening college access in the process, the Morrill Acts further

established the U.S. higher education system as an instrument for prosperity and democracy (Cantor, 2012).

The critical role of education in fostering participatory democracy was emphasized and reinforced by Dewey (1916), who maintained that educational spaces were where students of diverse classes, races, and cultural backgrounds could come together to develop a shared, mutual understanding of interests, goals, means, and ends. In this way, institutions of higher learning served to enhance the public conscience and citizenship, and reinforce the participatory democratic system (Waks, 2007). The Dewian perspective, interpreted in a modern globalized era, prescribes a teaching and learning agenda that places increased emphasis on providing access for underprivileged students and on supporting multicultural awareness through intergroup educational experiences (Waks, 2007). In 1946, President Harry S. Truman created the President's Commission on Higher Education, popularly known as the Truman Commission. The Commission identified higher education as a unifying institution serving a diverse citizenry, and proposed a system of higher education from which no one would be barred on the basis of financial difficulty (Ostar, 1991). The Higher Education Act of 1965 established federal grant and loan programs to support college and university enrollment for underprivileged students, providing access to economic and social opportunity through education (IHEP, 1998). So that higher education not remain principally the province of the privileged, but that it shall also be open to serve and reflect all Americans who might gain from participation in it, was the visionary call of Dewey and like-minded successors. Their calls remain as relevant now as when originally articulated.

Education for Society

Today, many of the work-related competencies deemed important by employers are those that are also seen as fundamental to a liberal education. Business owners and executives have expressed that higher education should place increased importance on critical thinking and analytical reasoning skills; applying knowledge in real world settings; ethical decision-making; civic knowledge, participation, and civic engagement; intercultural competence; and familiarity with cultural diversity both in the U.S. and abroad (Hart Research Associates, 2010). These findings prescribe a pedagogy to serve workforce development as well as the fostering of social and civic consciousness. Such a curriculum would stimulate students to consider the public and civic implications of professional work, to learn how to collaborate and develop relationships in contexts of diversity, and to better understand local economies, cultures, and politics (Battistoni & Longo, 2005). Outside the workplace, college-educated citizens contribute their knowledge and skills in wide-ranging ways including serving on juries, contributing to charitable organizations, and participating in essential democratic institutions (McMahon, 2009).

An education for a society and world that is becoming increasingly pluralistic and multicultural requires that college students interact with and learn from diverse others who hail from a variety of backgrounds, experiences, identities, and sensibilities (National Task Force on Civic Learning and Democratic Engagement, 2012). Students experiencing, and participating in, a diverse learning environment will be better equipped to become effective citizens and professional leaders in a diverse world. At the same time, the growing demand for a college-educated workforce means that institutions of higher education will need to increasingly recruit, admit, enroll, and support undergraduates from historically underserved backgrounds to meet employers' needs (Conway, 2010). This includes individuals who identify as racial/ethnic

minorities, as well as those who come from a lower-income background (Association of American Colleges and Universities, 2007; Cantor, 2012; Gurin, et al., 2002). Many of the students attending or completing college will be first-generation college students.

First-Generation College Students

Many of the postsecondary students of the future will be the first in their families to attend college—the prospective first-generation (FG) college student. Of the United States' population under age 18, 29% have parents with an educational attainment of high school or less and an additional 30% have parents who attended some college or earned up through an associate's—but not a bachelor's—degree. Only 41% have parents who have attained a bachelor's or higher degree (McFarland et al., 2019). Yet, for underserved groups such as FG college students, attainment of a four-year credential constitutes a principal pathway to securing upward economic mobility and success (Suárez-Orozco et al., 2008). With FG young adults continuing to value the possession of a postsecondary credential as an avenue to employment opportunity and individual economic prosperity (Longwell-Grice et al., 2016; Nuñez & Cuccaro-Alamin, 1998), the number of FG college applicants and students is predicted to rise in the future (Anderson, 2017; Giancola et al., 2008) and continue to comprise approximately one-third of the U.S undergraduate college population (Skomsvold, 2015). Employers'—and by extension, the economy's—need for academically credentialed individuals also demands increased postsecondary participation and completion among our nation's elementary and secondary students. In short, an agenda for individual or national success—economic or otherwise—suggests that postsecondary enrollment, persistence, and graduation of FG college students must be increased.

In a number of ways that relate to academic success, FG students (in this study, defined as those whose parent(s) or guardian(s) have not completed a bachelor's or higher degree) are distinct from continuing-generation (CG) students (i.e., those whose parent(s) or guardian(s) hold a bachelor's or higher degree). Parents of FG students possess relatively little familiarity with accessing and attending college, and therefore may have less information and guidance about the college experience to share with their children (Engle, 2007; Pascarella & Terenzini, 2005; Palbusa & Gauvain, 2017). FG students, in going to college and assuming the role of college student, are breaking from familial precedent and tradition—embarking on a journey that is new to both themselves and their families (Engle, 2007; London, 1996). While in college, they may feel more isolated (Bean & Eaton, 2000; Billson & Terry, 1982; Hsiao, 1992; Ostrove & Long, 2007; Owens et al., 2010) and often face greater challenge in connecting with faculty, peers, and the institution (Horn 1998; Nuñez & Cuccaro-Alamin, 1998). FG students also find college to be more stressful than do their CG peers (Gibbons et al., 2019; Mehta et al., 2011; Wilbur & Roscigno, 2016). While FG students and their families are a diverse group, demographically they are somewhat distinct from CG students and families. Directly or indirectly, each of these factors may impact FG students' college experiences—and the likelihood that they will persist and graduate.

Demographic Characteristics

Level of parental education is unequally distributed over race/ethnicity and socioeconomic status (SES); FG students are more likely than others to be students of color (Aud et al., 2012; Gandara & Contreras, 2009; Kena et al., 2016; Redford & Hoyer, 2017) and from lower SES backgrounds (Choy, 2000; Eagan et al., 2015; Redford & Hoyer, 2017). These factors are both related to persistence. National data by race/ethnicity show baccalaureate completion

rates of 39% for Native American, 41% for Black/African American, 42% for Hispanic, 50% for multiracial, 63% for White, and 69% for Asian students at four-year institutions (Snyder et al., 2016). Because White students remain the most prevalent racial group across the various sectors of postsecondary education, and constitute well over half of all students at public and private not-for-profit, four-year institutions (McFarland et al., 2019), factors related to race including campus racial climate and discrimination will disproportionately impact FG students. Finances also disparately impact the college completion of FG students. A disaggregation of baccalaureate completion data by income and FG/CG status showed that graduation rates are lowest among low-income, FG students (Cahalan et al., 2018). With FG students having fewer financial resources to draw upon for funding college than CG students, FG students are more apt to work and take on larger loan debt—each factors that can slow or serve as barriers to college completion (Engle & Tinto, 2008). Further exploration of how race/ethnicity and SES correlate with or mediate college-related experiences for FG students is needed to provide insight in terms of how to best support their educational pursuits.

College Access

Relative to continuing-generation college prospects, first-generation college prospects enroll in postsecondary institutions at significantly lower rates. A recent, nationally representative sample of high school enrollees found that 72% of FG students went on to attend a postsecondary institution, while 93% of students whose parents had earned at least a bachelor's degree attended college (Cataldi et al., 2018). Chen and Carroll (2005) found that 28% of all high school 12th grade students had parents with no postsecondary education, but this group represented only 22% of college enrollees. Clearly, educational mobility—and therefore its benefits—are more limited for families with little to no college experience.

When they do go to college, FG students are more likely to attend institutions that do not offer a bachelor's degree. FG students typically attend two-year institutions, while CG students are more likely to attend four-year colleges. The numbers indicate that FG students are roughly half as likely as CG students to enter into a baccalaureate degree program (Cataldi et al., 2018; Engle, 2007). Combined with the disparity in college access between FG and CG students, the disparity in baccalaureate-seeking rates suggest that it would take roughly four times as many high school students from a FG background—as compared to students from a CG background—to yield a baccalaureate-seeking matriculant. While this inequality may in part relate to variation in the quality and curricular rigor of high schools attended by FG and CG students, Horn and Nuñez' (2000) review of only “highly qualified,” academically-strong (p. v) FG and CG high school graduates showed higher college attendance rates for students whose parents had attained bachelor's degree. Thus, even among students who are viewed as academically prepared for college, CG students end up attending at higher rates. Clearly, there is unfulfilled opportunity for postsecondary attendance among high school graduates who would be FG college students. Though beyond the scope of the present paper, the problem of discrepant college access for FG students access calls for continued research and corrective policy.

Preparedness for College

Readiness for college encompasses academic preparation as well as preparedness for the social environment. Beyond academic and social areas, familiarity with the organization and functioning of campus—as well as skills including time management, goals focus, and self-advocacy—have been identified as important to FG students' college success (Byrd & MacDonald, 2005). However, for FG students, navigating the unspoken ways of college academic and campus culture can lead to difficulty and tension (Byrd & MacDonald, 2005;

Cushman, 2007; Richardson & Skinner, 1992; Thayer, 2000). While college preparedness is typically gauged through test scores and academic records, it also consists of students' own perceptions of their readiness. Awareness and understanding of preparedness, and how it plays out for college outcomes, is crucial to the development of informed ways to support FG students.

Academic Preparedness. For success in college, academic preparedness has been stated as singularly important (Swail et al., 2005). High school GPA (HSGPA) is predictive of both college GPA (Belfield & Crosta, 2012; Davis, 2010) and college credits earned (Belfield & Crosta, 2012). Rigor of the high school curriculum is also related to college GPA (Choy, 2001; Pike & Saupe, 2002; Warburton et al., 2001), for both FG and CG students (Choy, 2001; Warburton et al., 2001). A FG student's low performance in high school can lead to academic difficulties in college (Davis, 2010). Since college persistence is positively related to the rigor of the high school curriculum (Adelman, 1999, 2006; Warburton et al., 2001), to taking an advanced (e.g., trigonometry) math course in high school (Adelman, 1999, 2006; Martinez & Klopott, 2005; Swail et al., 2005), and to high school GPA and college entrance exam scores (Kopp & Shaw, 2016), students' academic performance in their high school years bears considerable relationship to how they will perform in college. As early as the first semester, college GPA is predictive of persistence (Crisp et al., 2009; Dika & D'Amico, 2016), and first-year academic success in college (Bowen et al., 2009; Kalsbeek, 2013) and cumulative GPA at the last registered term (Whalen & Shelley, 2010) are the most significant predictors of graduation . Thus, as high school curricular rigor and course performance as well as SAT scores are related to greater collegiate GPA and persistence, FG college students who are lower on these academic entry measures stand a reduced likelihood of graduating. As such, models of college student persistence should include these constructs.

Beyond quantitative or curricular measures of academic readiness are FG students' own perceptions of their preparedness for the academic demands and the social environment on campus. These perceptions may also co-occur with a sense of unease about prospects for academic success. Bui (2002) and Riehl (1994) both found a positive association between parental educational level and students' own assessment of their academic preparedness for college. Bui, as well as Peña (2013) and Shields (2002), found FG students to be more concerned about failing in college. Ramos-Sanchez and Nichols (2007) and Hellman (1996) observed less confidence among FG students for meeting the demands of college coursework. As feelings of preparedness are positively correlated with higher college GPA (Shields, 2002), the lack of preparedness felt by many FG students indicates potentially lower collegiate academic performance.

General Preparedness. For FG students, making friends and interacting with faculty can prove difficult because of the size of the campus and their unfamiliarity with it. Another challenge for FG students relates to understanding how colleges and universities function (Richardson & Skinner, 1992). Bui (2002) collected information on students' perceptions of their preparedness, and found that FG students felt less knowledgeable about the college social environment while also feeling that their non-FG peers were better prepared. Similarly, Ramos-Sanchez and Nichols (2007) determined that FG students felt less confident participating in class and interacting with instructors. Smith and Commander (1997) found that FG students did not feel comfortable with being assertive in classroom situations; Ryan et al. (2001) attributed students' reluctance to seek academic help from instructors in part to their own feelings of low social competence. Reviewing research on preparedness for college, both Engle (2007) and

Mulvey (2009) suggest that FG students would benefit from supports that increase their preparedness to increase their likelihood of success in college.

Awareness and understanding of readiness, and how it plays out in terms of college outcomes, is crucial to the development of informed ways to support FG students (Byrd & MacDonald, 2005). Study of the interrelationships among college readiness, on-campus experiences, and consequences including stress and level of academic performance for FG students may point to ways to better support them, leading to greater persistence and graduation rates. The present study examined students' incoming academic strength, ascertained their perceptions of their academic and social preparedness, and explored how these facets relate to college experiences and persistence.

Educational Attainment

Across sectors of the U.S. higher education system, FG persistence rates remain lower than CG rates (Cataldi et al., 2018; DeAngelo et al., 2011; Ishitani, 2016; Radunzel, 2018; U.S. Department of Education, 2016). National data, as well as the research literature, consistently show that retention and graduation rates vary by level of parental education, with the attainment of first-generation college students trailing that of continuing-generation students (e.g., Cataldi et al., 2018; Choy, 2001; Ishitani, 2006; Lohfink & Paulsen, 2005; Redford & Hoyer, 2017). In a study of enrollees at 4-year institutions, Ishitani (2016) found that year-over-year dropout rates were highest for students whose parents did not have a bachelor's degree (29%), as compared to dropout rates when one (23%) or both (18%) parents had a bachelor's degree. National data on 2- and 4-year college students, divided into four levels of parental education, showed that rates of leaving college without a degree were highest for students who parents did not have bachelor's degree. The trend held true at both 2- and 4-year institutions (Snyder et al., 2016).

Graduation-rate patterns by parental education are consistent with retention-rate patterns. Cataldi et al. (2018) found the lowest completion rates for students whose parents had no college, and the highest rates where at least one parent held a bachelor's degree. The differences applied to both 2- and 4-year institutions. With FG students constituting a sizable and important segment of the national collegegoing population—but showing lower retention and graduation rates—there is much room for improvement in their educational attainment if the challenges they face are better understood and addressed to enable their success.

College Experiences, Challenges, and Stress

Though FG students comprise a significant fraction of all higher education enrollees, their disproportionately low retention and graduation rates reflect the numerous challenges that they face as a group. Being on campus is often a more disruptive experience for FG students than for CG students (Terenzini et al., 1994). The parents of FG students may be less able to provide knowledge about the college experience and provide support that is rooted in such knowledge (Cabrera & Padilla, 2004; Nichols & Islas, 2016; Palbusa & Gauvain, 2017). As a consequence, FG students may find it more difficult to gain facility and comfort with navigating the various aspects of college, a challenge that may impede their persistence and success (Dumais & Ward, 2010; Woosley & Shepler, 2011). The parents and families of FG students may also be less attuned to college's academic demands and the responsibilities that such demands place on students. At the same time, obligations to home and family tend to be more acute for FG students, which pulls them away from campus activities and interactions that also compete for their time and attention. Psychological tension and stress can result (Jehangir, 2010b; Mehta et al., 2011; Pedrelli et al., 2015; Vasquez-Salgado et al., 2015). Wang and Castañeda-Sound (2008) found that although high levels of family support can reduce FG students' stress, low or

nonexistent support can increase stress. In going away to college, the FG student may develop a more-independent or otherwise changed identity that may be met with censure back home, potentially leading to additional stress caused by tension with family members (Orbe, 2008).

The culture of campus and assuming the role of college student can feel especially unfamiliar to FG students, leading them to feel alone or like outsiders. In the academic realm, FG students may be more likely to feel overwhelmed or alienated in the classroom (Cushman, 2007). Outside of the class, forging relationships with student peers—many of whom are not FG students—and developing social connectedness may prove particularly challenging. Feelings of tension and stress may accompany efforts or inability to fit in (Cushman, 2007; Jenkins et al., 2013). Because student commitment to continued study at an institution is positively related to students' satisfaction with faculty interactions and with the classroom experience, and also positively associated with their level of success with participating in the social environment (Strauss & Volkwein, 2004), negative experiences leading to stress in any of these domains may lead to reduced commitment to the institution. Identifying as a student of color, or coming from an economically disadvantaged background—each more likely among FG students—constitute additional, potential sources of tension (Jay & D'Augelli, 1991). Students from low-SES families are subject to stressors related to having fewer material resources (Jenkins et al., 2013). Students of color are more likely to experience discriminatory actions and perceive the campus climate as more racist than White students (Rankin & Reason, 2005). As a result, they are subject to greater levels of racially-related stress (Clark & Mitchell, 2018; Jay & D'Augelli, 1991; Wei et al., 2011), particularly at predominantly White institutions (PWIs) (Clark & Mitchell, 2018; Greer & Brown, 2011). It is perhaps unsurprising if unfortunate that a multi-institution study of mental

health conducted by Stebleton et al. (2014) found FG students felt significantly more stressed than CG students.

Stress and Persistence

Stress is increasing among college students (ACHA, 2013; 2018). In the five-year period between academic years 2009-10 and 2014-15, college enrollment grew by 6% while the number of students seeking counseling services rose 30% and attended counseling appointment rose 38%. Students' top two stated concerns were anxiety and stress (Center for Collegiate Mental Health, 2016). Sources of stress are varied and can encompass money, family responsibilities, personal relationships, health issues, and more (Burrus et al., 2013; Center for Collegiate Mental Health, 2020; Hurst et al., 2013; Johnson et al., 2014). Due to specific factors that relate to parental education level, FG students experience greater stress than CG students (Jenkins et al., 2013; Mehta et al., 2011). Because levels of stress are inversely related to college GPA (Amirkhan & Kofman, 2018; Pritchard & Wilson, 2003) and to retention and persistence (Amirkhan & Kofman, 2018; Saunders-Scott et al., 2018), the presence and magnitude of stress experienced by students can threaten their persistence.

Elevated levels of stress may lead students to question whether or not to continue studying at their institutions. For both White students and students of color, Johnson et al. (2014) found stress negatively related to institutional commitment, and institutional commitment positively related to persistence intentions. Thus, greater stress correlated with reduced persistence intentions. Wei et al. (2011) showed that stress was negatively related to persistence attitudes among students of color. Among students that leave college before graduating, stress has been identified as a contributing factor (Perrine, 1998; Thomas et al., 2021; Zhang & RiCharde, 1998). Multiple studies have acknowledged the prevalence of stress among the U.S.

college populations and its negative relationship to college outcomes, and have called for additional research not only to better understand the types and sources of stress that students are facing but also to inform interventions and remedies (e.g., Amirkhan & Kofman, 2018; Holland & Wheeler, 2016; Krumrei-Mancuso et al., 2013; Pieterse et al., 2010). Because stress can arise through a variety of factors and impact retention in various ways, a model-based approach—accounting for a multitude of variables, that may interrelate with each other in various ways—is a fitting method for sorting out the complexity. The present study explored connections among background factors, college experiences, stress, institutional commitment, persistence intentions, and persistence for FG students, increasing an understanding of how these factors uniquely and/or jointly relate to retention and graduation for this population. Results of the study also point to supports or interventions for enhancing FG student success.

Anti-deficit Framework

Research on the connection between parental educational level and student persistence goes back as far as the mid 1900s (Billson & Terry, 1982). The FG/CG distinction as applied to prospective and attending U.S college students constitutes an organizing lens that, in the conduct of research, has often set up and structured a comparativist analytic framework. The resulting comparisons of FG and CG students often evokes a deficit perspective applied to FG students. Alluding to students as lacking potential, or at risk of failure, or assuming that choice is related to the challenges they face discounts the strengths they bring and is inconsistent with the expectation that they will be successful.

Examples of a deficit framing of FG college students are readily found in the research literature. FG students have been found “...lacking in comparison to the student whose parents had significant experience with the college or university setting (Billson & Terry, 1982, p. 15).

Gardner (1996) indicates that “One of the biggest differences between first-generation and other students is their lack of familiarity with and understanding of the culture of college... due, in part, to their lack of association and comfort level with college graduates” (p. 32). Soria and Stebleton (2012) observe that “first-generation students lack social capital related to being successful in higher education” (p. 675). In relation to the large size and competitive nature of some higher education institutions, Richardson and Skinner (1992) asserted that “...first-generation students are at greater risk because they are less well prepared to cope with” such environments (p. 33). In terms of interacting and making connections on campus, FG students have been described as “...lacking college-related cultural capital” with the result that “their levels of engagement and integration may be different from those of their better-prepared peers” (Ward et al., 2012, p. 49); the same authors also describe FG students as “lacking commitment to the academic process” (p. 63). The deficit framework uncritically accepts dominant, privileged culture as an unquestioned standard of evaluation and judgment (Yosso, 2005). Through comparison to students who enjoy privilege related to their parents’ educational attainment, FG students—through a deficit perspective—are perceived and characterized in terms of the skills or constitution that they purportedly lack.

The deficit perspective locates deficiency within the individual. When applied in the research context, it suggests that students whose educational outcomes are disparate from, or lesser than, those of others bear responsibility for the difference. Such attribution neglects the role of intergenerational historical, economic, sociopolitical, and moral inequities—perpetrated against various segments of the population—that constitute the origins of the disparities in educational attainment that are seen today. Specifically, lack of equity in access to schooling has given rise to and maintained disparate educational attainment across generations. According to

an analysis by Wolfe and Haveman (2001), the “intergenerational effects of schooling” confers advantage, “including schooling... in the next generation” (p. 223). Persisting across generations, the “education debt” (Ladson-Billings, 2006, p. 3) is a consequence of the ongoing underinvestment in education to which underserved groups, including persons of color and those of lower income, have been subject. The education debt at once explains the sizable number of FG students, and that fact that they are more likely to come from underrepresented and underprivileged backgrounds.

FG students are an underrepresented group in higher education. In much of the research and popular literature, they continue to be regarded and discussed through a deficit lens (McKay & Devlin, 2016). Such messages perpetuate and reinscribe an ongoing negative view and narrative of underserved students—while excluding the role of historical marginalization and the socially constructed categories that ascribe deficit—leading to unequal access to education and educational resources, which continues to adversely impact their educational experiences and attainment to the present day (Ladson-Billings, 2006; Lee, 2016). So long as “structural problems inherent in the organization of education are camouflaged as cultural deficits of individuals” (Spiegler & Bednarek, 2013, p. 311), inequality will persist. A deficit model is not helpful or constructive for solving structural inequality; it contends that students to which it is applied are lacking in preparation, aptitude, or ability and are in need of special programs and interventions in order to make them more closely resemble their more-privileged peers. The deficit model also centers dominant male, White, privileged culture and knowledge as the norm, while devaluing the history, experiences, cultures and knowledges of culturally diverse groups including many FG students and their families. Thus, it discounts the strengths and assets that non-dominant groups possess and value (Covarrubias et al., 2019; O’Shea, 2016; Yosso, 2005).

A FG/CG comparativist approach to studying the backgrounds, experiences, and persistence of FG students invokes a deficit perspective. An anti-deficit view of FG students foregrounds their strengths, capabilities and experiences, and is free of reliance on a privileged, continuing-generation student group as a referent or standard. Therefore, going forward from this point, the present study will not subscribe to a deficit framework for interpretation of FG students' challenges. Rather than utilizing a comparativist framework through reference to CG students, this study concentrates on FG students. Though research affirms that FG students are on average less likely to persist and graduate, focusing on and identifying non-deficit factors that correlate with their completion of a degree has the potential to inform beneficial practices—or identify ways of further empowerment—to support their success.

A note: where illustrative of the challenges facing FG students, comparisons to CG students are made in this study. For example, FG persistence rates are seen to trail those of CG students. However, this study refrains from making a deficit interpretation of these observations. It is one thing to observe inequality in outcomes; it is another thing to ascribe such patterns to deficiencies of the individual. This paper acknowledges the former, and refrains from the latter.

Models of Student Retention

Student retention and persistence has only recently received the level of interest it currently holds within the U.S high education landscape. Not until the 1950s and later did colleges and universities become sensitive to the financial costs of student dropout, resulting in significant attention being given to the maintenance of student enrollment through retention efforts (Thelin, 2011). External pressures to reduce student departure and increase graduation rates—as well as the growth and diversification of the student body, which brought new and specific challenges to maintaining enrollments through retention—also drove increased efforts

towards identifying the causes of dropout and developing remedies to facilitate student success (Berger et al., 2012; Thelin, 2011). Ongoing research on student dropout and retention, including attention given to specific subgroups such as FG students, held potential for informing the design of policies and programs to support student persistence and graduation.

Advent and Growth of Retention Theory

The first, large-scale study of persistence was McNeely's (1937) multi-institution survey of student leaving. McNeely included dozens of institutions and identified several conditions and correlates of college dropout; the study was notable for its comprehensiveness and level of detail (Berger et al., 2012). The 1960s saw increased attention paid to the theoretical study of college student retention. Summerskill (1962) urged that dropout be studied within a social science framework to better understand the causal underpinnings of student leaving. Spady (1970; 1971) proposed and tested theoretical models of student dropout built on sociological and psychological concepts including "...previous educational background, academic potential...friendship support, intellectual development, grade performance, social integration, satisfaction, and institutional commitment (Spady, 1971, p. 38). Tinto (1975; 1993) extended Spady's (1970; 1971) framework, emphasizing the importance of a students' integration into the academic and social systems of an institution while also proposing that a student's early and ongoing commitment to the institution—and to graduating—would reduce the likelihood of dropout. According to Tinto, a student's commitment to graduating at a particular college or university increased as a function of his or her degree of academic and social integration within the institution.

Through the 1970s and beyond, external factors continued to influence the development and scope of retention theory. A decrease in the number of high school graduates in the 1970s

through the mid 1980s threatened college enrollment and tuition dollars. The resulting competition for students saw the emergence of enrollment management as a concept and professional occupation; it included a research component aimed at identifying personal and institutional factors relating to retention and graduation (Hossler, 2004; Berger et al., 2012). The broadening of postsecondary access for students of color, nontraditional, and first-generation students gave rise to new thinking on how to foster the retention of diverse college populations. The 1990s and beyond saw a diversification of retention theory and models that acknowledged the impact of campus racial climate and the complexities related to nontraditional and underrepresented student retention (Berger et al., 2012). Newer retention models incorporated the influence of the college environment and student's perceptions of their experience, as well as factors outside college, as important determinants of persistence and attrition (Aljohani, 2016; Pascarella & Terenzini, 2005; Yorke & Longden, 2004). These models acknowledged both sociological and psychological aspects of a student's persistence within a particular college or university.

Psychological Framework

The advent of the psychological dimension in student dropout and persistence models gave increased recognition to the role of student individual attributes, personal experiences on and off campus, and agency as determinants of their decision to stay in or leave an institution. Whereas Tinto (1975; 1993) emphasized a student's success in acclimating to the culture of an institution as a primary determinant of retention or dropout, the psychological approach viewed persistence as a function of student experiences and related psychological outcomes. The psychological framework holds student success as a shared concern of both student and institution, such that it is an institution's responsibility to create the supportive and reinforcing

environment that leads to a satisfying student experience, subsequent connectedness to the institution, and ultimately, persistence and graduation.

Researchers studying student persistence within theoretical frameworks have increasingly moved towards including psychological factors, in addition to including demographic, academic, and behavioral/sociological correlates of student success (Museus et al., 2017). Pascarella et al. (2004) examined psychological outcomes in college and found “substantial differences between first-generation and other students in how the experiences of college shape cognitive and noncognitive outcomes” (p. 273). Recent research focused on FG students and their adjustment to college campuses has tended towards a psychological framework for exploring their perceptions of campus life and feelings of belonging (e.g., Allan et al., 2016; Garriott et al., 2015; Johnson et al., 2011; Museus et al., 2017; Warnock & Hurst, 2016). Generally, these studies elucidate the challenges of transition and marginalization that FG students experience when enrolling in college, the extent of their academic success and social connectedness on campus, and the resulting internal psychological states or outcomes. They also propose that future research should explore the connections among institutional environment and experiences, satisfaction, academic progress, and persistence outcomes. The design and intent of this study aligns with these prescriptions.

Bean and Eaton Model

Central to framing retention as a shared endeavor across faculty, staff, and units on campus was Bean and Eaton’s (2000, 2001/2002) *Psychological Model of College Student Retention*. In addition to entry characteristics, academic and social integration, and institutional fit as influences on persistence, the psychological model also included student psychosocial attributes, campus interactions and experiences, and psychological outcomes as ultimately

predictive of persistence. According to Bean and Eaton, students' entry characteristics and environmental interactions give rise to psychological processes and manifest as psychological outcomes, which in turn determine integration, institutional fit and loyalty, intent to persist, and actual persistence.

While both Tinto (1975; 1993) and Bean and Eaton (2000, 2001/2002) view student interactions and resulting integration as an essential precondition for persistence intentions and institutional commitment, the Bean and Eaton (2000, 2001/2002) model proposes that psychological mechanisms mediate the extent to which students' interactions lead to integration. The model recognizes students' psychological reactions as resulting from the interplay between their backgrounds and the specific interactional and affective ways in which they experience campus. Positive interactions engender positive psychological outcomes while negative experiences have the opposite effect. Psychological outcomes in turn correlate with the likelihood of feeling affiliated with the institution, with feelings of affiliation positively impacting intention to persist. The model also captures student entry characteristics including skills and abilities, and posits that these characteristics impact the ways in which students experience the campus environment.

FG students are more likely to be persons of color, come from economically disadvantaged backgrounds, and come from families with relatively little college experience. To a FG student, a prestigious, private, residential and predominantly White institution may present a climate that is perceived as welcoming, but it may also be perceived as exclusionary. If the latter, the student may feel isolated, alienated, and stressed (Stephens, Townsend, et al., 2012). Along with the campus climate, additional sources of stress for FG students may include academic, social, co-curricular and personal involvements, as well as responsibilities to home

and family. Financial matters and personal management may also be of concern. High levels of stress can reduce the level of connectedness that students feel towards their college, increasing the likelihood that they will leave (Bean, 2005). The Bean and Eaton (2000, 2001/2002) model is suitable for capturing stress as a psychological outcomes borne of experiences on campus, and as an predictor of subsequent attitudes towards college, intent to persist, and actual persistence.

Purpose of the Study

As a group, first-generation college students persist at lower rates, and achieve lesser educational attainment, than their continuing-generation peers. They are also more likely to attend two-year institutions. They are also overrepresented among students of color and are more likely to come from financially challenged backgrounds. The greater levels of stress reported by FG students likely relate to common trials all students face in connection with college attendance, but also reflect their demographics as well as unique challenges associated with their role as educational aspirants and pioneers within their families and within the higher education institutions that offer them a college education and degree. At the same time, FG students' reasons for attending college are similar to those of CG students—gaining a good job and career, achieving financial security and prosperity, and providing opportunity and a satisfactory standard of living for their families and loved ones (Darling & Smith, 2007; Longwell-Grice, 2003; Longwell-Grice et al., 2016; Nuñez & Cuccaro-Alamin, 1998; Selingo, 2018).

Prestigious, private universities hold promise for FG students in that they are likely to offer strong support for academic achievement and for success after graduation. Yet, relatively little research exists that models FG students' experiences and persistence at a selective, private institution (Cheatem, 2018). This study was undertaken to address this gap in the literature, utilizing a modified version of the Bean and Eaton (2000, 2001/2002) comprehensive, theoretical

retention framework for exploring FG students' entry characteristics, interactions and experiences with peers and faculty, psychological outcomes, attitudes, intent to persist, and retention. To determine if students' reports of interactions and experiences, psychological outcomes, and attitudes could be interpreted as latent, psychological constructs an exploratory factor analysis (EFA) was performed. To ascertain if the patterns within the study data fit the modified Bean and Eaton (2000, 2001/2002) model, path analyses were conducted. The data utilized to carry out the study were selected to be sensitive to the experiences of FG students, without placing the onus of a deficit perspective upon them. The results of the study hold the potential to offer specific and valuable information for devising programs and support to facilitate the success of FG students and advance the literature in this area.

Study Description

This single-institution study took place at a large, private, selective, residential university in the northeastern U.S. Data for this study was acquired from two sources: the institutional record system at the site of the study, and a confidential student experience survey—the SU Student Experience Survey (SUSES)—administered to all degree-seeking undergraduates and capturing their campus experiences and reactions to them in terms of attitudes, stress, and intent to persist. Available on system were demographic, admissions, student records (including course grades and GPAs), and financial aid application data for all students. The student records data were available on a semester by semester basis. Retention and graduation outcomes were derived from student enrollment and completion records respectively.

The process of determining survey items involved a review of prior literature on student retention and related factors, as well as expert consideration of content to inform the purpose of the survey—to collect a broad range of data on students' experiences at the institution, and relate

these experiences to persistence. To ensure clarity and readability, the survey was pilot-tested with a subset of diverse students. To maximize the response rate and the accessibility of the survey to students, it was administered in paper and online modes. The collected survey data were stored electronically, and were linked to system data through a common key. Through this linkage, the relationships between survey responses and system variables could be examined to test—and further refine—the theoretical model of persistence used in the study.

Definition of Terms

Several of the variables and constructs utilized in this study are defined in the *Variables in the Study* section of this paper. Explanations of additional constructs and concepts benefit from narrative description, which are provided in this section. Many of the constructs in this study originate from the data it utilizes or from the EFA; these are also described and discussed in the *methods* and *results* sections of this document.

First-generation College Student

Conceiving the FG construct as an operationalization of parental education renders a relatively pure definition that is unsaddled with additional qualifiers or demographics with which parental educational level correlates. While FG is related to family economic circumstances as well as race and ethnicity, these attributes may relate to and affect—but do not define—FG students. Thus, research exploring FG students should also collect data on demographics so that they are distinguishable from (i.e., do not conflate with) the influences or effects of parental education in the conduct of analysis.

The current study examines FG student persistence within the Bean and Eaton (2000) framework. Across the research literature, definitions of FG students vary by parental educational level. This study defines FG students as those whose parents or guardians did not

attain a bachelor's degree. This definition is consistent with Berkner and Choy (2008), Berkner et al. (2002), Cataldi et al. (2018), and Choy (2001) who found relatively similar levels of college academic preparedness and persistence among students whose parents had no college or some college (but less than a bachelor's degree), relative to students whose parents held a bachelor's. The no-baccalaureate definition also aligns with Peralta and Klonowski (2017), who suggest that FG students be defined as degree-seeking postsecondary enrollees whose parents or guardians have not earned a college degree. Furthermore, it is reasonable to assume that parents of students who have earned less than a college degree are less likely to have lived in a campus residence hall than parents who earned a bachelor's (Price, 2008). Because the site of this study is a residential institution with an on-campus housing requirement during the first two years of attendance, the less-than-bachelor's definition of FG is likely to capture students' parents who have not lived in a residence-hall—and whose children are the first in their family to experience this living arrangement. Also, the no-bachelor's FG definition enables parental education to enter the analysis as a four-point scale ranging from *did not finish high school* to *completed an associate's degree*. Thus, the model allows for examination of relationships between parental education level and other factors related to persistence.

Attrition

The failure of a student to enroll in consecutive semesters constitutes *attrition* (Berger et al., 2012, p. 12). In this study, attrition is non-enrollment in the fall or spring semester at the same institution following an enrolled semester, with non-enrollment not being due to graduation. The student may enroll in a different institution, but is still considered as attrited from the original institution. Attrition is synonymous with *drop out* and *leaver/leaving*.

Campus Climate

The judgments and evaluations made by an individual in regard to an organizational environment constitute its climate (Naylor et al., 1980). Perceptions of climate are psychological and attitudinal, and reflect institutional attributes (e.g., size; demographic composition), an individual's observations of the environment, and the individual's experiences and interactions with others in the organization (Naylor et al., 1980; Peterson & Spencer, 1990; Reid & Radhakrishnan, 2003). In higher education, the topic of climate usually relates to tolerance for, and appreciation of, diversity (Franco & Kim, 2018). The attitudes and behaviors towards diversity demonstrated by students, faculty, staff, and the administration also comprise the institutional climate (Hurtado et al., 1999).

Because students evaluate climate from their own sociodemographic, economic, racial, and other standpoints, institutional climate is not fixed across collegegoers but should be understood to vary by student. Though individuals from any marginalized group may perceive the campus climate as unfriendly or hostile where diversity is undervalued (Sue, 2010), the “perceived climate for diversity is generally discussed and studied in higher education from the perspective of race and racism” (Franco & Kim, 2018, p. 26). In this study, the campus climate is defined as a student's perceptions of, and feelings about, the campus environment and community as a function of general, and race-related, experiences and interactions on campus.

Classroom Climate

Ambrose et al. (2010) defined the classroom climate as the “intellectual, social, emotional, and physical environments” of a course (p. 170). Classroom climates vary in terms of the degree to which they are intentionally created by the instructor versus emerging organically through interactions (Vivyan, 2016). Because of its subjective nature, students experience the

classroom climate in different ways; certain elements will be more salient to some students than others” (Diamond, 2019, p. 32).

Multiculturalism

Borrowing from several viewpoints on multiculturalism, this study conceives it as “the construction of ideas pertaining to issues such as race, class, gender and sexual orientation” (Tierney, 1994, p. 12). Multiculturalism also ensures that diverse individuals “can maintain their identities, take pride in their ancestry, and have a sense of belonging” (Moawad & El Shoura, 2017). It honors the “coexistence of diverse cultures” (Chu, 2005) and their practices across communities and contexts.

Persistence

Enrollment of a matriculated, baccalaureate-seeking student at a specified point or semester subsequent to matriculation (i.e., after initial enrollment). Enrollment—the taking of courses—is an action whereby the student can make progress towards a degree by passing the courses. Though consistent with the definition of persistence offered by Berger et al., (2012) and Habley et al., (2012), persistence in the present study denotes only within-institution enrollment and excludes cross-institution course-taking. Furthermore, at institutions having a semester calendar system including the site of this study, summer enrollment is not a requirement for persistence. Continued persistence and accumulation of credits (or hours) towards a degree will ultimately conclude with degree completion.

Socioeconomic Status (SES)

According to the American Psychological Association (APA), SES is “the social standing or class of an individual or group. It is often measured as a combination of education, income

and occupation” (APA, 2020). In this study, use of “SES” is intended to primarily emphasize financial means or disadvantage; less so education or occupation.

Stressors and Stress

This study adopts the viewpoint that stress is a reaction to stressors, which are demands placed upon individuals (Romano, 1992). Stress does not automatically result from stressors, but rather is mediated by an individual’s appraisal of the risk presented by the stressor as well as the ability to cope with it (Lazarus & Folkman, 1984; Romano, 1992). For the purposes of this study, stress is synonymous with anxiety, distress, and tension.

Wellbeing

This study adopted the definition of wellbeing put forth by Dodge et al., (2012). Specifically, it is “when individuals have the psychological, social and physical resources they need to meet a particular psychological, social and/or physical challenge” (p. 230). Wellbeing is dynamic, varying with the particular set of resources an individual holds to countenance a particular challenge, or challenges.

Significance of the Study

As the population of students attending postsecondary becomes increasingly diverse, the importance of research focused on specific groups and environments grows. Pascarella (2006) underscored the importance of studying discrete student populations in distinct sectors of higher education, to develop explanatory models of the impact of higher education that best represent students of particular background and college contexts. First-generation college students are one such group (Pascarella, 2006); they will continue to represent a sizable portion of the U.S. college-going population. To the extent that FG students are successful in college and graduate,

they will realize the personal, social, and financial gains associated with attainment of a college credential.

Unfortunately, FG students are more likely to leave college without graduating—a finding documented across many reports and studies (Pascarella & Terenzini, 2005; Reason, 2009). The effect persists even after controlling for many other variables related to persistence (Chen & Carroll, 2005; Choy, 2001; Ishitani 2003, 2006; Kopp & Shaw, 2016; Nuñez & Cuccaro-Alamin, 1998; Warburton et al., 2001). These retention outcomes and research results imply that FG students face complex and unique challenges in achieving college success involving a combination of factors and processes. However, relatively little research has focused on the interplay of FG students' entry characteristics, their academic and social experiences, their perceptions of the campus environment, the stressors they face, their attitudes towards the institution, and how these influences relate to persistence intentions and behavior. Each of these factors are important to persistence. Entry characteristics may directly or indirectly impact outcomes. Campus experiences and interactions—positive and negative, academic and social, with faculty and peers—give rise to students' perceptions of the campus environment, and also may result in stress. Negative experiences may lead to unfavorable perceptions and stress, which can also cause students to feel less belongingness and commitment to the institution. Under these conditions, the student is more likely to leave. Therefore, while academic skills and performance play a clear role in retention, students' perceptions of their experiences as well as social and psychological factors are also predictive, and are important aspects of a holistic approach to understanding and supporting student persistence (Campbell & Mislevy, 2013; Lotkowski et al., 2004; Robbins et al., 2004). The connections between experiences, campus environment

perceptions, attitudes and intentions, and persistence call for a structure of inquiry that represents and models these various factors.

Consistent with Pascarella's (2006) call for the systematic study of underrepresented populations of students, many studies and reviews have pointed to an urgent need for more research to explore and better understand the degree to which retention models function for and represent the entry characteristics and campus experiences of various demographics—including FG students—and how these experiences influence persistence (e.g., Berger & Milem, 2000; Burrus et al., 2013; Martinez et al., 2009; Mehta et al., 2011; Purswell et al., 2009; Reason, 2009; Terenzini & Reason, 2005). Additionally, the research literature has called for further study of the connections between experiences of stress—including various sources of stress—and persistence (Amirkhan & Kofman, 2018; Bean & Metzner, 1996; Burrus et al., 2013; Elkins et al., 2000; Metz, 2004–2005; Pieterse et al., 2010; Pritchard & Wilson, 2003; Roksa & Kinsley, 2018; Saunders-Scott et al., 2018). This appeal is made even more urgent with the increase in stress as reported by contemporary studies of college students (ACHA, 2013; 2018). A valid and fruitful approach for understanding why FG students persist or leave, and for informing the development of programs and policies to support students and enhance the learning environment to foster success, is through exploring the dynamics affecting FG student retention via a comprehensive retention-model framework (Braxton et al., 1997; Garriott et al., 2015; Kerby, 2015; Swail, 2004; Thayer, 2000).

Another dimension of the current study relates to the fact that FG college students' persistence and attainment rates are highest at private, highly selective institutions. However, at such institutions, their rates still trail the rates of CG students (DeAngelo et al., 2011; Snyder et al., 2019). Yet, the majority of research focused on understanding FG college students'

educational experiences neglects private, highly selective institutions (Cheatem, 2018). So far as can be discerned, no research has examined the combination of FG students' entry characteristics, academic and social experiences, their perceptions of the campus environment, their attitudes towards the institution, the stressors they face, and how these influences relate to persistence intentions and behavior at a highly selective, private, residential research university. Additional research is needed in order for researchers and practitioners to gain a better understanding of FG students' interactions and experiences as college attenders, and how these elements are psychologically impactful at prestigious, private institutions (Wentworth & Peterson, 2001).

Pursuing a nuanced understanding of the process by which campus climate experiences impact persistence for FG students within a given educational context merits a suitable framework. The Bean and Eaton (2000, 2001/2002) psychological model offers such a framework. The model recognizes that individual experiences constitute psychological experiences, which in turn have implications for how connected students feel on campus and their commitment to continued study at the institution. Utilizing the psychological framework of Bean and Eaton (2000, 2001/2002) to explore the processes that culminate in retention or attrition for FG students not only constitutes a test of the framework, but—through the measures employed in the current study—also surfaces the “interdependent and mutually constitutive” (Bowleg, 2008, p. 312) ways in which FG students experience campus, the level of stress they experience, and the impact of these factors on their retention. Thus, the significant contributions of this study include utilization of the Bean and Eaton model to explore the persistence-related factors and processes of FG students at a highly selective private residential institution—an applications of this framework that has not been previously examined.

The proposed study also takes advantage of significant methodological strengths. A wealth of institutional data are available for each student, including the areas of admissions, demographics, student records, and financial aid application. Actual persistence—including retention (i.e., enrollment) and graduation at each semester, as well as GPA—are sourced directly off system. Thus, the study benefits from true, accurate longitudinal data. Information on students' participation in support programs is also available. In addition, the SUSES survey instrument captures a rich set of student-level responses relating to their experiences and perceptions of campus including interactions, racial climate, stressors, attitudes, and intent to persist. The combined data set—longitudinal records, and cross-sectional survey responses—present an exclusive and powerful opportunity to comprehensively model the intended and actual persistence of FG students at a highly selective, private residential institution.

Institutions of higher education need not only share responsibility for a welcoming and psychologically healthy climate for all FG students, they should also adapt themselves as needed to be accommodating and inclusive (Jehangir, 2010a; 2010b). The present study of FG students through the Bean and Eaton (2000, 2001/2002) psychological framework has the potential to shed light on the antecedents of actual FG student persistence, particularly in terms of demographics, entry characteristics, and campus experiences as well as resulting psychological outcomes (i.e., stressors) and attitudes. Factors found to relate positively or negatively to persistence—and under what conditions—could inform enhancements, supports, or interventions that reinforce or ameliorate phenomena found to connect with persistence. For example, if academic interactions are shown to relate positively to persistence for FG students, then increasing academic interactions among FG students (perhaps through an orientation program or through increasing faculty awareness of FG students' needs) may increase their persistence.

Chapter Two: Review of the Literature

First-generation students have, and will continue to, attend postsecondary education in sizable numbers (Skomsvold, 2015). While college attendance and completion rates continue to grow in the U.S.—stabilizing the fraction of FG students in the educational system—approximately one-third of undergraduates have parents with no college experience (Cataldi et al., 2018). The educational attainment of parents matters, as it is correlated with postsecondary access as well as the retention and graduation rates of college-going students.

FG students' circumstances relate to their parents' educational attainment. Because the parents of FG students have less familiarity with postsecondary education, they are more challenged in providing their children with information about the college experience and adapting to the role of college student. Similarly, the parents of FG students may be less able to appreciate and understand the academic, social, developmental, and time demands of college. In college, FG students may be more likely to feel or bear responsibilities related to home and family. They may also experience difficulty with making the academic and social connections on campus that provide a sense of connection to the institution and the people in it. FG students may also experience greater psychological stress. Each of these factors may present a potential impediment to retention and graduation.

Parental education level is not distributed equally across racial/ethnic identity and SES. Specifically, those with lower educational attainment are more likely to be an underrepresented minority or financially disadvantaged. Both of these sociodemographic categories are related to reduced college persistence and graduation rates. FG students of color may experience discrimination and an unwelcoming campus racial climate—especially at PWIs—and thus may feel especially out of place and uncomfortable on campus. Students from low-income

backgrounds may have to rely more heavily on loans to meet college costs, yet FG low-income students may be particularly averse to taking on debt to further their education and are more likely to have a job while in college to make ends meet (Eagan et al., 2016). In connection with these challenges, minoritized and low-income students may feel elevated levels of stress. The demographics of FG students and their family circumstances, their preparedness for college, how they experience campus and its climate, may present significant challenges to persistence and graduation.

Despite the difficulties they face, FG students have proven that they can be successful in college. For some, the opportunity to accomplish what those before them were unable to attempt or do provides special motivation (Havlik et al., 2017). Maintaining resilience in the face of obstacles, drawing strength from one's identity, and maintaining an open mind for new experiences have enabled FG students to flourish in college and graduate (Demetriou et al., 2017). Participating in academic, co-curricular, or extracurricular activities as well as forging relationships with faculty and peers are additional means through which FG students have made connections and persisted to graduation (Demetriou et al., 2017; Hébert, 2018). However, FG students continue to persist at relatively low rates, demonstrating a necessity for continued research on how their backgrounds, campus experiences, and levels of stress relate to their intent to persist and to graduate. Research exploring and comparing these facets of the college experience has the potential to identify the challenges and needs of FG students, and to point to supports that facilitate their success.

A review of the literature serves to contextualize the present effort, and facilitate interpretation of results. This chapter first presents various theoretical frameworks for the study of retention. Next, national-level student retention and graduation rates are examined—overall,

as well as disaggregated by race/ethnicity and SES. Then, a definition of FG students is provided, and they are elucidated in terms of their distinct characteristics. Challenges specific to FG college students are also briefly reviewed. A review of literature on the campus climate, including the classroom and residence hall climate, is then presented—including research on FG students' climate-related experiences—as well as climate's relationship to students' sense of belonging and academic outcomes. Next, stress and its impacts are covered. Finally, research hypotheses are presented.

Retention Theories and Models

Historical Considerations

Over the nearly 400-year history of the U.S. postsecondary system, interest in tracking and studying student retention is a relatively recent development. In colonial times up through the middle of the nineteenth century, only a small fraction of the populace attended colleges or universities. Most young and able-bodied individuals were needed on farms and homesteads; neither families nor society at large had significant need for postsecondary education and schooling (Berger et al., 2012). Colleges of the time attended to the elite, or to those seeking to serve in the ministry (Berger et al., 2012; Snyder, 1993). Of those who did matriculate, many stayed enrolled for only one or two years. Degree completion held relatively little importance for one's future (Thelin, 2011); fewer than half of enrollees graduated (Berger et al., 2012) and leaving college before graduating was not viewed as problematic (Thelin, 2011). The scant attention paid to student retention reflected the chief priority of institutions of higher education at the time: recruiting students in order to secure their enrollment, and thus maintain fiscal viability. Many institutions were not even able to maintain sufficient enrollment over time to stay open long enough for students to graduate from them (Berger et al., 2012). It would not be until many

years later—the middle of the 20th century—that retention and graduation rates became matters of importance and consequence within higher education.

As the U.S. proceeded into the latter half of the nineteenth century and into the early 1900s, several developments led to a rapid expansion of postsecondary enrollment—and set the stage for the interest in retention that would follow. The number of postsecondary institutions increased, as did attenders. The Morrill Acts of 1862 and 1890 increased the number of 4-year public colleges and universities. At the same time, many private 4-year institutions were also founded. In 1859, there existed approximately 290 colleges in the United States. By 1899, this number had more than doubled to 720 institutions (Goldin & Katz, 1999). This had the effect of boosting postsecondary enrollment capacity and attendance. In 1869-70—the first year in which national enrollment data were collected—higher education enrollment totaled 63,000 students. By 1899-1900, the count had almost quadrupled to 238,000. While this gain was driven primarily by population increases, the percentage of 18 to 24 year olds enrolled in college grew from 1.3 to 2.3 in the thirty years from 1869-70 to 1899-1900. Institutional size grew during this period, as the relative gain in enrollment outpaced the number of new colleges (Berger et al., 2012; Snyder, 1993). Urbanization and industrialization generated increased demand for students conversant in management techniques as well as science and mathematics, which led colleges to enhance their academic offerings in these disciplines (Snyder, 1993). With a greater connection between curriculum and career, students took an increased interest in earning a degree (Goldin & Katz, 1999), and retention and graduation emerged as topics of interest and attention in higher education (Demetriou & Schmitz-Sciborski, 2011).

Across the decades of the twentieth century, college and university enrollment continued to grow. Ongoing increases in the number of high school students led to greater postsecondary

participation (Goldin & Katz, 1999). The Servicemen's Readjustment Act, or GI Bill, of 1944 boosted college enrollment by over two million, and the Higher Education Act of 1965 provided students—including those from disadvantaged backgrounds—with access and support (Demetriou & Schmitz-Sciborski, 2011). The number of four-year and especially two-year institutions also expanded rapidly, leading to increased postsecondary opportunity. At the same time, additional new colleges were founded to serve specific religious or minoritized populations. The continued professionalization of jobs and careers made a college degree a requisite for many occupations (Berger et al., 2012); dropping out of college curtailed one's job opportunities. The growth in postsecondary enrollment, the expanding diversity of institutions and their missions, and the increased importance of degree completion jointly contributed to a heightened attentiveness to the wide variation of retention and graduation rates seen across individuals and across colleges and universities (Berger et al., 2012).

Origin, and Maturation, of Retention Research

Formal study of college student retention began in the 1920s and 1930s (Berger et al., 2012; Braxton, 2000a). Johnson (1926) studied the effect of several variables on collegiate success, and found that a multi-variable model predicted success more accurately than a single-variable model. In 1936-7, the U.S. government commissioned a series of studies examining postsecondary education and how it might be improved. One of the investigations (McNeely, 1937) involved students who entered degree programs at one of 25 institutions in 1931-2; it compared degree completers to non-completers (McNeely, 1937; Morrison & Silverman, 2012). McNeely's study was the first, large-scale study of persistence. It made extensive use of institutional records, differentiated between involuntary (i.e., dismissal) and voluntary departure, and found that academic failure, disciplinary events, and financial challenges were leading

causes of leaving college before graduation. Sickness or death, being needed at home, and lack of interest were also deemed to be important reasons for departure. First-year students were more likely to attrit, as were older-than-average students. Those enrolled in private institutions were more likely to graduate (McNeely, 1937). McNeely's inclusion of dozens of institutions, and identification of several conditions and correlates of college dropout, made the study notable for its comprehensiveness and level of detail (Berger et al., 2012). By identifying variation in graduation rates as a function of institutional attributes, year of study, student demographics, and academic and extracurricular factors, McNeely (1937) foreshadowed the subjects, topics, and scope of research questions addressed by many of the retention studies that would follow decades later.

World War II—and the postwar expansion of higher education institutions, access, and enrollment—captured much of the interest and attention of the postsecondary community in the 1940s and 1950s (Berger et al., 2012; Morrison, & Silverman, 2012). However, by the late 1950s, concern about student attrition had grown and had drawn the attention of academic researchers (Demetriou & Schmitz-Sciborski, 2011; Thelin, 2011; see also Spady, 1970). While early retention studies tended to focus on poor academic performance and its mitigation (Berger et al., 2012), other researchers such as Summerskill (1962) voiced the need for better-organized and integrated research drawing on the social sciences and exploring the joint influences of economic, familial, psychological, and social—as well as academic and institutional—factors to better understand the causal underpinnings of student attrition and retention. Use of an interdisciplinary framework became viewed as the best analytic structure for studying and addressing the problem of student dropout (Morrison & Silverman, 2012). The increasingly

sophisticated lens through which attrition was viewed and studied during the 1960s would give rise to the theoretical perspectives in the decades that followed.

The burgeoning of retention theory in the 1970s coincided with increased enrollment-related challenges confronting postsecondary institutions. Colleges and universities became aware of an impending decline in the number of high school graduates, a trend that would start in 1977-78 and persist for years (Morrison & Silverman, 2012; Snyder, 1993). Through self-audit and analysis, institutions also became increasingly aware of the financial costs associated with attrition. Academically underprepared students tended to repeatedly attempt and then drop courses in which they struggled, negatively impacting tuition revenue. Many of the students caught in this pattern of “churning” ultimately dropped out, reflected in reduced graduation rates (Thelin, 2011, p. 330). Government funding tied to degree completions also drove the increased visibility and consequentiality of graduation rates (Berger et al., 2012; Thelin, 2011). Beyond its impact on postsecondary institutions, college dropout costs individuals lost wages, opportunities, and quality of life—and also costs society in terms of reduced workforce skills and readiness, global competitiveness, and business and tax revenue. A theoretical approach to the study of attrition and retention offers a means of identifying and interweaving into a unified whole the various and numerous factors that each play a part in determining students’ success (Creswell, 2002; Kerby, 2015). As a role of theory is to describe and explain (Creswell, 2002; Krathwohl, 1998), retention theory and research can serve as a guide for the higher education community in developing programs and supports to foster student persistence and graduation.

Role of Theory

Theory provides a means of organizing and interpreting empirical information while also suggesting propositions (hypotheses) that can be tested through data collection and application of

analytic techniques. Through a reciprocal process, theory is developed from, tested against, and assimilates results produced through observation and empirical research. In turn, theory consolidates and explains research findings and generates new propositions and hypotheses for testing. Further observation, empirical inquiry, and interpretation of findings guides additional development and refinement of theory (Braxton, 2000b; Wallace, 1971). The value of theory lies in its usefulness for identifying important variables, consolidating research findings, and identifying areas in need of additional study (Krathwohl, 1998). Arising through an iterative, co-informative process of empirical inquiry and inductive analysis and interpretation, retention theories attempt to explain the processes and dynamics that relate to and underlie student persistence or departure (Braxton, 2000b). The scholarly study of retention and attrition remains an ongoing process, endeavor, and need.

In general, theories of college student retention are constructed to capture the variety and complexity of factors that are relevant to students' persistence towards attainment of a credential. They often take the form of models that propose connections between student persistence outcomes (i.e., retention; graduation; attrition) and causal, explanatory predictors. Connections among predictors may also be included in retention models (Fry, 2010; Habley et al., 2012; Tinto, 1993). As retention is a longitudinal phenomenon, retention theory also recognizes how the dynamics underlying persistence or dropout vary over time. In addition to the longitudinal dimension, retention may also map to psychological, social, organizational, or systemic levels of influence. Students' innermost feelings, their campus interactions, and their off-campus experiences are important for understanding persistence, meriting inclusion in retention theories and models. An accounting of student retention might address the following extensive (but by no means exhaustive) set of circumstances and factors: the context of home and family life;

students' motivations for seeking a postsecondary education; their reasons for selecting the institution(s) they attend; their level of familiarity with applying to and enrolling in college; their preparation for the academic and nonacademic demands of college; their socio-demographic location within society and with respect to other students on campus; their on-campus experiences; and their intent to persist. Each of these aspects may influence retention and graduation.

College Impact Models

In their initial and subsequent volumes reviewing the effects of higher education on students, Pascarella and Terenzini (1991; 2005) make a distinction between two different types of theoretical frameworks for studying college impacts. One, a “developmental” model (p. 2), is centered on growth-related changes that occur internal to an individual over time. Examples of student development models include Chickering’s (1969) and Chickering and Reisser’s (1993) identity development model, Baxter Magolda’s (2001) theory of self-authorship, and the psychosocial identity model of Abes et al. (2007). In Astin’s (1993) taxonomy of student outcomes, developmental outcomes are characterized as psychological (e.g., self-concept; critical thinking ability) rather than behavioral (e.g., personal habits; level of educational attainment) (pp. 10-11). While developmental theories and models may include and account for contextual factors that relate to intra-individual change such as campus layout, peer behavior, and organizational climate (Moos, 1973), the focus of this class of models—in contrast to the study of variation in development across individuals—is on the substance and processes of within-student change over time.

The second type of theoretical framework can be described as a “college impact model” (Pascarella & Terenzini 1991, 2005; Terenzini & Reason, 2005, p. 2). The college impact model

is conceived to organize and account for various, broad, classes of factors that relate to educational outcomes (Pascarella & Terenzini 1991; 2005), and thus it is focused “on the *source* of student change” (Ozaki, 2016, p. 25). As articulated by Terenzini and Reason (2005) and Reason (2009), three groups of influences are posited to bear on outcomes—student precollege characteristics and experiences, the college experience, and outcomes which include learning, development, change, and persistence. While the college impact model is referenced here in the singular—i.e. as outlined by Terenzini and Reason (2005) and Reason (2009)—it is most appropriately considered as a family of models (Ozaki, 2016; Pascarella & Terenzini 2005). The common characteristic of college impact models is that they elucidate student inter-individual change as a function of between- or within-college effects; the former relating to structural, policy, and faculty aspects of institutions and the latter concerning students’ experiences (Pascarella & Terenzini 2005). The specific sets of variables examined through any particular instantiation of the college impact model are contingent upon the particulars of the research employing the model.

In research on college outcomes, college experiences are typically the variables of greatest interest. Experiential factors comprise the bulk of theory put forth to account for college student outcomes, and thus are highly represented in theoretically-oriented outcomes research. Variables of interest may also capture instruments or levers that an institution may be able to control or change to create an environment that is more favorable to and supportive of student success (Terenzini & Reason, 2005). For example, if business processes related to registration and financial aid are found to be archaic and burdensome to students, effort can be made to streamline them. If there is interest in a particular themed learning community but none exists,

one can be formed. If students whose native language is not English struggle inside or outside of class, language-related supports can be implemented to enable their success.

The contribution of various aspects of college experiences—the organizational context, the peer environment, and individual student experience—to student outcomes are not equal. Structural features of institutions explain relatively little variation in student outcomes (Terenzini & Reason, 2005), whereas individual student experiences are foremost in terms of their impact on a range of outcomes including learning and psychosocial development (Pascarella & Terenzini 1991; 2005). Students' peer and individual experiences across classroom, co-curricular, and out-of-classroom settings often interact such that no single context is unconditionally related to an outcome (Terenzini & Reason, 2005). Indeed, foundational (e.g., Tinto 1975, 1993) and more recent (e.g., Bean and Eaton 2000, 2001/2002) theoretical models of attrition and retention feature interrelating facets of student experiences and interactions that ultimately relate to persistence.

In the college impact model, student precollege characteristics and experiences capture the wide variation in entering students' demographic backgrounds, academic and other skills, experiences, and dispositions (Pascarella & Terenzini 2005; Reason, 2009; Sax & Wartman, 2010; Strayhorn, 2008; Terenzini & Reason, 2005). This set of variables serves multiple functions, depending on the focus of a study. Precollege characteristics and experiences may be considered as control variables when assessing the impact of college experience on outcomes. For example, in attempting to assess the impact of an intervention (e.g., tutoring) on an outcome (e.g., college GPA), accounting for precollege academic preparation may render a more accurate estimate of the effect of tutoring. That is, the impact of college experiences on outcomes may be conditioned on precollege variables. Similarly, precollege characteristics may serve as covariates

upon which the impact of college experiences depend. For example, outcomes associated with learning community participation may depend on the race/ethnicity or generational status of the participating students (e.g., Pike et al., 2011). Finally, precollege characteristics may be of primary interest in a research study. The ways in which students of differing backgrounds experience campus—impacting various outcomes—is of increasing interest as the diversity of those attending college continues to increase.

Astin’s Inputs-Environment-Outcome (IEO) Model

Astin (1993) detailed a three-part conceptual model “for studying college student development“ (p. 7). Inputs refer to student attributes at the time of entry into college. The environment—similar to the college experience portion of Reason’s (2009) Comprehensive Model—encompasses campus programs and policies, faculty, peers, and educational experiences. Outcomes are student attributes after college. The IEO model is a general framework rather than a fleshed-out theory; as such, it is up to the researcher to specify the inputs and outcomes, and environmental aspects, to be studied.

A key purpose of the IEO model is to offer a sound research design through which the impact of various environments can be estimated. Inputs serve as pretests, outcomes as posttests, and the impact of various environmental features can be estimated by taking the difference between outcomes and inputs under varying environmental conditions (Astin, 1993). When assessing outcomes, not accounting for inputs leaves the question of whether the outcomes were affected by inputs, the environment, or both. Collecting data on inputs provides a baseline against which to compare outcomes. In this way, the model is well suited to studying developmental changes and ascribing change to environmental conditions.

Relatively simple yet flexible, the IEO model has seen broad and ongoing application in studies examining student outcomes (Ozaki, 2016). It is also the analytic paradigm utilized in past and current versions of the *How College Affects Students* series (Mayhew et al., 2016; Pascarella & Terenzini 1991; 2005). Many models of college student outcomes, in their essence, conform to the IEO framework. A limitation of the model (and in actuality, a limitation of all models that utilize an inputs/outputs framework to assess change) is that not all outcomes are measurable as inputs. This includes retention, an outcome of interest in the present study. For example, retention to the second year of college cannot be measured as an attribute at the time of entry into college. In cases where an outcome cannot also be measured as an input, Astin (1993) recommends that variables that are predictive of the outcome be collected as inputs. In the case of student persistence as outcome, Astin cites collection of high school grades and admissions test scores as predictors of retention (p. 14). These pre-entry academic measures (and additional entry variables) are captured in the present study.

Sociological and Psychological Retention Theory

The study of college student retention as it is known today—typically viewed through theoretical lens, and tested and refined via empirical inquiry—commenced in the 1960s and 1970s (Bean & Eaton, 2001/2002; Berger et al., 2012; Morrison & Silverman, 2012). Summerskill’s (1962) call for psychological and sociological perspectives to inform the study of retention was realized in the theoretically-focused research that followed in the 1970s (Morrison & Silverman, 2012), a decade dubbed as “...the dawn of theory in the study of college student retention” (Demetriou & Schmitz-Sciborski, 2011, p. 302). The perspectives of this era drew from established fields of study and their theoretical and empirical works.

The dominant persistence theories of the 1970s and the decades immediately following owed much to sociology. The sociological perspective places the student within the social system that is the institution of enrollment. Of significance is the degree to which the student is intertwined within the social fabric of the campus (Fry, 2010). The sociological perspective centers the social aspects of an institution and the extent to which a student becomes involved with communities on campus. Spady's (1970, 1971) explication of the undergraduate dropout process—rooted in Durkheim's (1951) sociological theory of suicide, and including psychological measures of student perceptions of campus—is generally acknowledged as the earliest theoretically-based model of student retention (Berger et al., 2012; Demetriou & Schmitz-Sciborski, 2011; Yorke & Longden, 2004). For Spady (1970; 1971), students' success in connecting and identifying with the campus social system (including their embrace of social norms as well as their ability to establish connections and friendships) positively impacts their persistence. Students not successful with integrating into campus life are analogized to individuals not assimilating into society. A lack of integration could result in departure from college. Spady's model also includes family background, academic performance and intellectual growth, and psychological constructs including satisfaction with the college experience and commitment to graduate from the institution. Spady (1971) empirically tested his model, and found evidence that both academic success and social integration decreased the likelihood of dropout. Subsequent theoretical work on college student retention (e.g., Astin 1984, 1993; Tinto, 1975; 1993) continued to invoke Spady's (1970; 1971) constructs including social integration.

Tinto's Interactionist Model. Building on Spady's (1971) theoretical underpinnings and model of the undergraduate dropout process, Tinto's (1975; 1987) longitudinal model of voluntary college dropout centered the academic and social systems of institutions—and the

degree to which students had success with integrating into these systems—as precursors to, and determinants of, students’ departure decisions. To the extent that students realize academic and social integration in college, they are theorized to hold greater respective commitments to their academic goals and their institution (Tinto, 1975; 1987). Tinto’s model also incorporates student academic history, motivators for pursuing a degree and attending particular institutions, demographics, and family background as pre-enrollment determinants of initial commitment to academic goals and to the institution. Tinto’s 1987 model of voluntary student departure is informed by Van Gennep’s (1908/1960) research on rites of passage as well as Durkheim’s (1951) study of suicide. Tinto (1993), citing research on the significance of students’ classroom interactions for integration and persistence, added students’ interactions with faculty and staff to the model. The 1993 model also acknowledged the community external to the institution as an indirect influence on outcomes.

Evaluation of the Tinto Model. Tinto’s model remains a dominant retention framework, and much retention research rests on or borrows from it. Given the models’ prominence in the college student retention literature, it has been subject to examination and review. Both empirical, and theoretical, evaluations have been advanced. Some assessments have been supportive of Tinto’s model; others critical. Partial evidence for the structure of the model has been found, with preenrollment characteristics exerting their impacts through institutional experiences and integration, and persistence relating positively to social integration and institutional commitment (Pascarella & Chapman, 1983; Pascarella & Terenzini, 1983). Based on single-institution studies, Braxton et al. (1997) found that social integration and institutional commitment most factored into persistence. Little empirical support was found for connections between initial commitment to the institution and subsequent academic and social integration,

and relationships between student entry characteristics and subsequent persistence. As Braxton et al. (1997) found partial empirical support for the Tinto model, they recommended that it be retained as a useful framework and modified as indicated by additional research. Citing various research studies that found significant connections between psychological, financial, and organizational variables and the constructs of the Tinto model, Braxton et al. (1997) specifically recommended that the model or its successors be subject to revision through inclusion of psychological, financial, and organizational influences on student retention.

The conceptual aspects of Tinto's (1975, 1993) model have generated criticism. Examining Tinto's model from an anthropological standpoint, Tierney (1992) challenged the model's cultural and epistemological assumptions. Tierney pointed out that the cultural *rites of passage* (Van Gennep, 1908/1960) referenced by Tinto pertain to customary, intracultural transitions—not the potentially discordant, intercultural traverse of moving from a familiar home and family culture to the predominantly White male culture of most American college campuses. Tierney (1992) argued that the traditional cultural rituals studied by Van Gennep (1908/1960) were undertaken with the expectation that all individuals to whom the ritual applied will not only participate, but be fully supported and will succeed. As such, participation in traditional rites is not voluntary; dropout is not an anticipated outcome. For Tierney, traditional rites of passage as such do not apply to the transition to college, and to analogize the college transition as a cultural rite of passage is to oversimplify and underestimate the challenges new college students face in adapting to a new environment.

Tierney (1992) also took issue with Tinto's view that students needed to disassociate from their home cultures and communities—and accommodate and integrate into the new culture of campus—as a necessary part of making a successful transition to college. Tierney's belief was

that it was the responsibility of colleges to value and foster multiculturalism and an inclusive, multicultural environment to foster social and cultural belonging and engagement of all students, in opposition to Tinto's "social integrationist perspective" (Tierney, 1992, p. 604) that would have students forsake their former cultures and embrace the dominant campus culture. Similarly, Rendón et al. (2000) critiqued Tinto's model in placing the onus on the student to adjust to the campus cultural milieu. Rendón et al. asserted that students of color and other marginalized or nontraditional populations often took strength from their home cultures and relationships as sources of support, and should not be expected to dissociate from them when attending college. Rendón et al. also emphasized the institution's responsibility for nurturing students' involvement and creating validating experiences, which would support the success of undergraduates of all backgrounds. In a similar vein, Guiffrida (2006) suggested additions to Tinto's model, to better recognize the role of home social systems and how they provided students with "essential cultural connections and nourishment that helped them deal with racism, cultural isolation, and other adversities at college" (p .458).

In unison, Tierney (1992), Rendón et al. (2000), and Guiffrida (2006) are critical of the major underlying assumption of integrationist models: that all incoming students should be expected to assimilate to the dominant—and often White middle class culture—of campus irrespective of their cultural backgrounds and communities of origin. Rather, each of these authors suggests that higher education institutions value and support the wealth of backgrounds represented by their diverse students. By fostering an inclusive campus environment in which all students have a place and feel connected, institutions honor and support the various identities and cultures of their students and, in doing so, share in the responsibility for student success (Johnson et al., 2007). The viewpoint that it is an institution's role and responsibility to create a

welcoming and supportive environment, and foster positive, supportive interactions, is reflected in more contemporary retention theory and research that incorporates students' experiences and psychological reactions, including perceptions of the campus climate as determinants of satisfaction with, and commitment to, the institution.

Role of Psychology. Renewed consideration of what constitutes good theory for retention research points to the psychological dimension of student experience as an underexamined yet crucial consideration. Behavioral measures of student connectedness to campus such as frequency of academic or social interactions fail to recognize not only the challenges of involvement for students from underserved backgrounds, but also that interactions constitute psychological experiences (Museus et al., 2017; Rendón et al., 2000). Individual experiences are subjective; psychological reactions are varied and individually constructed. For example, when students from different backgrounds

engage in the same behavior (e.g., interaction with a faculty member) within a campus environment that marginalizes the minority group, ... minority students often have more negative experiences than their majority counterparts. Thus, scholars argue that knowledge of these environmental and psychological elements are necessary to understand student success. (Museus et al., 2017, p. 189)

Psychological accounts of student retention and departure center the individual student as the locus of causal determinants of persistence. Internal cognitive, affective, attitudinal, and belief dispositions and mechanisms are theorized to drive decisions to persist or depart from an institution, or depart entirely from postsecondary pursuits (Fry, 2010). Psychological theories of student retention account for students' psychological reactions to their college environment, and are useful for assessing the effects that such reactions have on retention (Johnson et al.,

2014). Because FG postsecondary enrollees tend to be less familiar with college and with shouldering the role of college student (Engle, 2007; London, 1996), are disproportionately students of color (Aud et al., 2012; Gandara & Contreras, 2009; Kena et al., 2016; Redford & Hoyer, 2017) and tend to come from lower-income backgrounds (Choy, 2000; Eagan et al., 2015; Redford & Hoyer, 2017), the effects of psychological experiences—including perceptions of campus climate, as well as stressors that impact FG students and their mental health especially intensely (Covarrubias et al., 2019; Castellanos & Jones, 2003; Jenkins et al., 2013; Mehta et al., 2011; Stebleton et al., 2014; Wilbur & Roscigno, 2016)—have particular relevance for FG student retention and for related research. Integrationist models like Tinto's (1975, 1993) insufficiently account for the role of psychology in persistence. A framework that centers psychology in modeling persistence is Bean and Eaton's (2000, 2001/2002) psychological model of college student retention.

Bean and Eaton Psychological Model. The Bean and Eaton (2000, 2001/2002) model of college student retention, which borrows from Fishbein and Ajzen's (1975) attitude-intention-behavior theory, proposes that actual behavior—persistence, or departure—is a manifestation of a student's intention to stay at or leave the institution. While intention by itself is not explanatory of persistence—it is theorized as an outcome of preceding determinants (Bean, 1982, 2005)—it is a distinct construct in the model, and may more accurately capture a student's plans to stay or leave than actual behavior. Behavior may reflect causes not related to intent such as family, fiscal, or health exigency that causes students to withdraw from college contrary to their intent. Because of intent's strong relationship to actual behavior, and because it is also a direct outcome of prior retention-related processes, intention is a useful construct for evaluation of retention theory (Bean, 2005). According to Bean and Eaton (2000, 2001/2002), intent is influenced by

attitudes, which relate to the level of connectedness that one feels towards others at the institution and towards the institution itself. In this definition, attitudes are tantamount to satisfaction with being a student, and with loyalty directed towards the institution. Satisfaction is posited to impact intent in two ways: directly, and through loyalty (Bean, 2005). Thus, the model frames persistence as an outcome of intent, which itself is a product of a set of attitudes.

Attitudes, in the Bean and Eaton (2000, 2001/2002) model, arise from academic and social integration. Integration figures prominently in the interactionist model of Tinto (1975; 1993), who borrowed the concept from Spady's (1971) sociologically-oriented model of student dropout. While the Bean and Eaton (2000, 2001/2002) model does not expand or reconceptualize prior theorists' formulations of academic and social integration, it does provide a psychological explanation detailing how academic and social integration is attained for a given student—a mechanism that Bean and Eaton (2000, 2001/2002) and Bean (2005) claim was left unaddressed in prior theoretical work including Tinto's. Bean and Eaton (2001/2002) contend that academic and social integration will not necessarily follow from student interactions with peers, faculty, and the institution. Rather, it is the nature of those interactions—as experienced, felt, and assessed by the student as a function of the students' own psychological processes—that give rise to psychological outcomes, which in turn impact academic and social integration, feelings of belongingness, commitment to the institution and ultimately, intent to stay or leave.

The three psychological processes at the heart of the Bean and Eaton (2000, 2001/2002) model are self-efficacy (Bandura, 1997), coping and adaptation (French et al., 1974), and locus of control, which is a component of attribution theory (Rotter, 1966; Weiner, 1986). In the model, the processes describe student psychological dispositions at the time of entry into college. As a student accumulates time in college, the psychological processes mediate experiences,

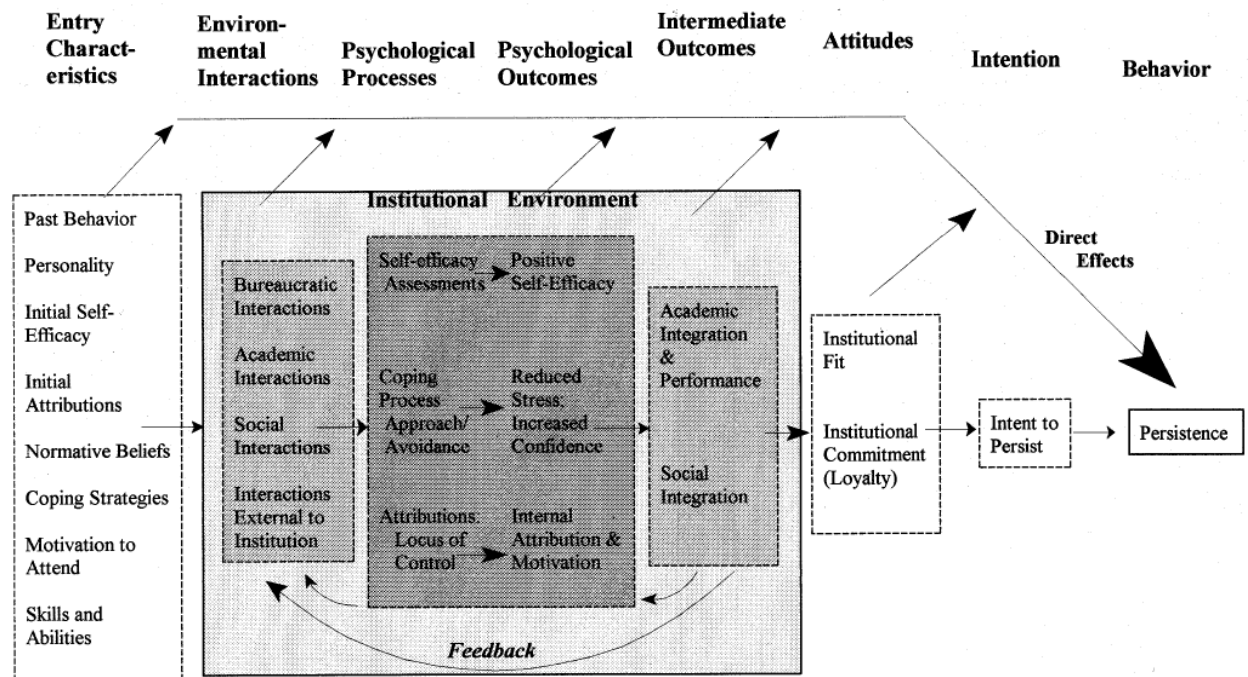
interpretations, and reactions to academic, social, and bureaucratic interactions inside the institution. They also mediate external interactions such as those involving family and friends.

In the model, psychological processes depict student “adaptive strategies...to feel more comfortable and integrated into the environment” (Bean & Eaton, 2001/2002, p. 75). They are theorized to impact academic success and social belonging. Self-efficacy is the extent to which a student believes in his or her agency for achieving a specific, desired outcome including academic performance. Greater self-efficacy leads to greater academic and social integration. Coping involves approach or avoidance behavior undertaken by a student when presented with a specific challenge or stressor. Approaching and confronting a challenge is generally (but not necessarily) a healthier adaptation than avoidance, and fosters connectedness to the college environment. Locus of control concerns the causal attributions a student makes with respect to an outcome that he or she experiences. Attribution to self as the causative agent is internal locus of control, while attribution outside the self is external locus of control. For example, a student may attribute good grades to regular class attendance and diligent studying (internal locus of control), or instead to luck or to being a professor’s favorite student (external locus of control). Internal locus of control leads the student to feel that has the effect of increasing motivation to apply oneself academically and to engage in social activities, fostering academic and social integration (Bean & Eaton, 2001/2002). Each of the psychological processes may increase the student’s connectedness to the institution, resulting in a stronger sense of belongingness and loyalty.

At the head of the Bean and Eaton (2000, 2001/2002) model are several student entry characteristics that are theorized to impact how students experience and navigate institutional and external interactions. They include the psychological dispositions that mediate the student’s assessment of his or her experiences, as well as past behavior related to academic and social

preparedness for college, motivation, skills and abilities, and the student’s beliefs that people close to them feel that attending the college is a good idea. As the student enters college, background and entry characteristics interact with the student’s psychological dispositions to establish initial self-efficacy, attributions, and coping skills. As the student gains experiences in college, the psychological processes and dispositions are subject to adaptation and evolution, continuously modifying the student’s psychological constitution and eventually leading the student to assess the degree to which he or she is connecting with the academic and social systems of the college (Bean & Eaton, 2000). If the student feels connected, institutional fit and loyalty are more likely to follow, and the student will develop an intent to persist—which in turn leads to actual persistence. While the model posits that actual persistence (i.e., behavior) results from a longitudinal, causal flow of constructs from entry characteristics to intent, it also proposes that factors within any stage of the model may directly impact actual persistence (see figure 2.1).

Figure 2.1. Bean and Eaton (2000, 2001/2002) Psychological Model of College Student Retention



Evaluation of the Bean and Eaton Model. The Bean and Eaton (2000, 2001/2002) model is the exemplar of psychological retention models (Habley et al., 2012). It was developed, in part, to counter the dominance of sociological models of retention (i.e., Spady, 1970, and Tinto, 1975, 1993) (Bean & Eaton, 2000). While it references many of the aspects of the Tinto (1975, 1993) model, it introduces psychological attributes and processes, and proposes that they are ultimately predictive of persistence. Tinto's (1975, 1993) sociologically-focused model features neither psychological attributes nor psychological processes; this reflects his position that psychological considerations do not significantly advance an understanding of student dropout, nor can they substantially advise institutional action to address dropout. According to Tinto (1993), retention models based on student psychological attributes were limited since they did not account for and did not model the larger institutional and situational contexts that, in addition to psychological factors, also determined student behavior. Contemporary with Tinto (1993), student psychological aspects were commonly conceived as often-negative traits and typologies; thus, dropout resulting from psychological factors indicated an inability or deficit inherent to the individual. This being the case, a logical conclusion was: if an institution desired to increase retention it would need to recruit and admit only those students having the requisite psychological constitution for college success—clearly, a impractical proposition (Tinto, 1993). While Tinto (1993) acknowledged the “necessary role of personality in individual responses to educational situations” (p. 86), he maintained that personality could not reliably distinguish persisters from leavers across different situations, and that psychological explanations of dropout remained underdeveloped. However, Tinto's narrow view of the role of psychology in student retention decisions—i.e., “seeing departure in terms of student weakness or failure” (Yorke & Longden, 2004, p 77), as well as his disinclination to consider how institutions might improve

the psychological environment to foster student persistence—limit the validity and reach of his critique.

In the Bean and Eaton (2000, 2001/2002) model, student psychological processes are dynamic and encompass entry characteristics as well as outcomes. They can be facilitative of, or inhibit, success. Psychological dispositions upon entry to college are not viewed as fixed, but rather may change through an individuals' interactions with various facets of the institutional environment. Psychological outcomes result from interactions with campus faculty, staff, and peers. Therefore, the institution is contributory to, and bears responsibility for, students' psychological outcomes. Bean and Eaton (2000, 2001/2002) underscored the importance of an individual's psychological reactions to campus life and experiences as determinants of academic and social integration, attitudes towards the institution—and ultimately, persistence. Elder (2017) captured the significance of the Bean and Eaton's (2000) model, in terms of its implications for institutional responsibility, through contrast with the Tinto (1975, 1993) model:

The distinct difference between the Student Integration Model and the Psychological Model of Student Retention is that and Bean and Eaton's (2000) model is centered around student attitudes. Bean (2005) acknowledged that any person or experience on a college campus can impact these attitudes, that all campus entities are responsible for student persistence, and that “an institution needs to change what it is or what it does in order for retention rates to change” (p. 237). (p. 10)

In the Bean and Eaton (2000, 2001/2002) model, attitudes are outcomes of experiences and psychological processes, and are also determinants of intent to persist. The presence of attitudes in the Bean and Eaton model acknowledge individual experiences, and the consequentiality of those experiences, for a goal shared by both student and institution: persistence. Recently, Tinto

(2017) articulated a model of motivation and persistence that includes self-efficacy and sense of belonging as indirect influences on persistence. As part of a larger, interactionist framework Tinto's new model proposes psychological mechanisms that bridge students' perceptions of their experiences and the campus climate, and institutional actions and the broader college environment, as impacts on persistence.

Relative to Tinto's (1975; 1993) model, the Bean and Eaton (2000, 2001/2002) psychological model "has received little scholarly attention" (Johnson et al., 2014, p. 76). To the best of the author's knowledge, the model has not been subject to any systematic review. However, it has received scrutiny through several studies that apply it as a framework for studying the role of psychological factors in retention. Employing path analysis and a modified version of the model, Johnson et al. (2014) found empirical results that were consistent with the theoretical interrelationships among the constructs of the model. Campus experiences as well as preparation for those experiences were related to perceptions of campus climate, which in turn was connected with commitment to the institution. Commitment was associated with intent to persist, and with actual persistence. Separate analyses of White and minoritized students showed that the theoretically specified pathways among the variables in the model held for both groups. Johnson et al. (2014) demonstrates that student psychological states as impacted by their experiences can explain institutional commitment and persistence, demonstrating that inclusion of psychological dimensions and their impacts on student success merit inclusion in theoretical modeling of retention.

Roksa and Kinsley (2018) studied the connection between psychological well-being and academic success. Their results lent support for inclusion of psychosocial factors in models of student success, and they cited the Bean and Eaton (2000, 2001/2002) model as appropriate for

modeling psychological processes in retention research. In a meta-analytic study of community college student achievement and persistence, Fong et al. (2017) found a relationship between psychosocial factors and persistence across demographic groups, providing support for the Bean and Eaton (2000, 2001/2002) model. Rodgers and Summers (2008) adapted and revised the Bean and Eaton model to introduce a new framework for studying psychological processes and persistence among African-American students at PWIs, though the proposed model was not tested. Rodgers and Summer's work acknowledged a point later made by Baker et al. (2021)—that the major theories of college student retention have been developed at PWIs, necessitating additional research to explore their limitations and further their development for application to a broader range of students and educational contexts. In addition to the aforementioned studies providing evaluative insight into the Bean and Eaton model, numerous authors (e.g., Altermatt; 2019; Burgette, & Magun-Jackson, 2008/2009; Friedman & Mandel, 2011; Naylor et al., 2018) cite the model to underscore the importance of—or provide a basis for including—psychological constructs in their own retention research without actually implementing the model. Meanwhile, no research known to the author has demonstrated that psychological constructs are unimportant to retention models.

The current study investigated and centered FG students' psychological reactions resulting from their campus interactions, which were hypothesized to impact persistence outcomes. It also assessed the impacts of entry skills and college academic performance. Because the Bean and Eaton (2000, 2001/2002) model acknowledges and hypothesizes the role of psychological outcomes in persistence, and accommodates the additional variables and constructs in the study, it is an appropriate persistence framework for this study.

Theoretical Perspectives and Models: Summary

An extensive variety of theoretical frameworks, drawing upon multiple academic disciplines, have been proposed and developed for studying various college student persistence outcomes. Taken together, they offer a rich set of alternatives for exploring and understanding why some students complete their degrees and others do not. As college persistence outcomes result from a diverse set of conditions and root causes and are best understood at the level of the individual, each of the theoretical frameworks can inform research that explains retention or departure—and ultimately can inform strategies and interventions for increased student success.

The primary purpose of the current study is to gain a better understanding of FG students' experiences within the institutional environment (i.e. academic and peer interactions; own-and other-race interactions), their resulting psychological processes and outcomes (i.e. perceptions of the campus and living environments; various sources of stress), and the subsequent impact of these factors on attitudes towards persisting—and intent to persist—at the institution. The SUSES was developed to assess students' locations on experiential and psychological dimensions, to identify how these factors correlate with retention. Understanding the persistence decisions of FG students—given their entry characteristics, as well as the ways in which they experience campus—requires a model that is sensitive to these dynamics. Because most FG college enrollees identify as students of color (Redford & Hoyer, 2017) and thus are more likely to experience race-related discrimination on campus (Rankin & Reason, 2005), their psychological reactions and their resulting attitudes towards the institution may be especially influenced by their race-related experiences (Bean, 2005). The SUSES instrument, gauging students' interactions and perceptions including those related to race and diversity, captured FG students' experiences at the institution. The Bean and Eaton (2000, 2001/2002) theoretical

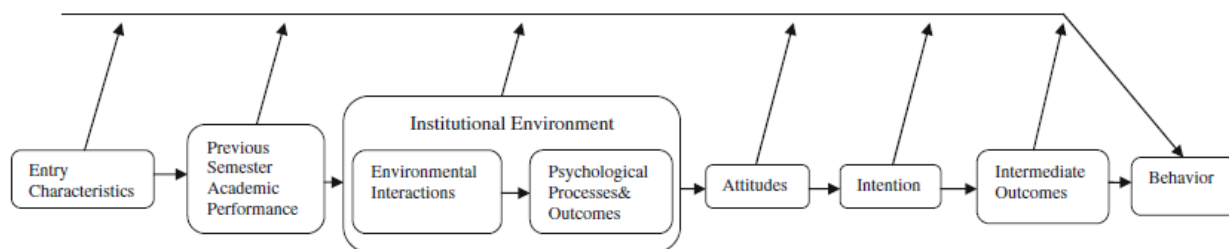
framework puts emphasis on interactions, experiences, psychological outcomes, and attitudes that are hypothesized to be correlative with persistence and as such, it is a fitting model for exploring these factors for FG students and understanding the resulting impacts on persistence.

While this study utilizes the Bean and Eaton (2000, 2001/2002) conceptual framework, the model was modified for applicability to the purposes of the study and closely followed the structure of the model in Johnson et al. (2014) (see figure 2.2). The central thesis examined is that student experiences, and psychological processes and outcomes, lead to attitudes about the institution, which influence persistence intentions. These aspects form the core of the model. Entry characteristics included academic ability measures and a student of color indicator, which may relate to how FG students experience—and form attitudes about—the campus climate. Entry skills also included students’ perceptions of their academic and social preparedness. As economic circumstances are correlated with parental educational level and may also relate to student experiences and persistence, variables capturing family finances are also included in the study.

Modifications to the Bean and Eaton (2000, 2001/2002) model for this study reflect the time difference between data collection and actual persistence outcomes. Whereas the original model situates intermediate outcomes (i.e., academic integration and performance) between psychological outcomes and attitudes, the data collection for the present study occurred mid-term of the students’ second semester, prior to the intermediate outcomes that were recorded at the end of the second semester and subsequent years. Thus, the modified model shows intermediate outcomes after intention and prior to actual behavior. Consistent with Johnson et al. (2014), academic performance at the end of the first semester is added to the model. Since this was prior to data collection, it was identified in the modified model as previous semester academic

performance. Finally, because the survey data were cross-sectional and collected just once, the original model's feedback loop among facets of the institutional environment could not be included in the modified model, and is omitted from it.

Figure 2.2. Modified Bean and Eaton (2000, 2001/2002) Model from Johnson et al., 2014.



Retention and Graduation

Upon admission and matriculation into an institution of higher education, a student's primary objective is to obtain a degree or credential. Continued persistence is the pathway to graduation. Persistence is a longitudinal process, reflected in retention and graduation rates over time. When organized by demographic factors, these rates vary widely. The primary goal of this study was to examine how student demographics, other characteristics, and campus experiences relate to persistence for FG students at a prestigious, private residential institution. A review of retention and graduation rates—by generational status, by race/ethnicity, and by financial resources—provides important context for how FG students experience campus and the stressors they may encounter.

Generational Status and Persistence

Disparities in attainment between FG and CG college students is a recurrent finding in national data and in the research literature, a pattern that holds true for both retention and graduation. Numerous studies looking at retention establish that FG students are more challenged in persisting. Examining a national sample of students enrolled at four-year institutions, Lohfink and Paulsen (2005) found a first-year retention rate of 82% and 77% for CG and FG students

respectively. Reviewing data from a nationally representative sample, Cataldi et al. (2018) reported postsecondary dropout rates of 33% for students whose parents had not attended college—greater than the dropout rate for students whose parents had some college (26%) or had earned a baccalaureate degree (14%). A multistate study of ACT test-takers found that retention rates were lowest for FG students, at both two-year and four-year institutions (Radunzel, 2018). Focusing on matriculants at four-year institutions, Ishitani (2016) found higher dropout rates for students whose parents did not have a bachelor’s degree (29%), as compared to one (23%) or both (18%) parents having a bachelor’s degree. Using nationally representative data on community and four-year college students—and controlling for several parent and student variables—Wells (2008) found that students whose parents had a college degree persisted at higher rates than students whose parents did not have a degree. However, the advantage for the former group only held for students at four-year institutions. Single-institution studies have also found lower retention rates for FG students (e.g., Riehl, 1994). Irrespective of how individual studies define FG in terms of parental education level, FG students consistently demonstrate higher dropout rates.

Level of parent educational attainment is also associated with graduation rates. A recent analysis of U.S postsecondary enrollees revealed a six-year bachelors-degree graduation rate of nearly 50% for students whose parents had at least a bachelor’s degree; for students whose parents did not have a bachelor’s degree the graduation rate was only 20% (U.S. Department of Education, 2016). A study of National Student Clearinghouse data showed that the overall FG graduation rate at four-year institutions was fourteen percentage points lower than the non-FG rate. While graduation rate differences by parent educational level were found to vary by postsecondary sector (e.g., public vs. private), all sectors exhibited a lower FG rate (DeAngelo et

al., 2011). Similarly, the likelihood and level of degree attainment varies by extent of parental education. Using a nationally representative sample and comparing college enrollees whose parents had no college experience (i.e., the FG group) with students whose parents had a bachelor's degree (the CG group), Redford and Hoyer (2017) found group differences. Less than 25% of the FG students had attained a bachelor's or higher degree, while over half of the CG students graduated with a bachelor's or higher degree. An earlier, national longitudinal study of college students looked at grouped levels of parental education, and determined that students whose parents did not have a college degree were less likely to earn any degree in college as compared to students whose parents had a baccalaureate degree (Berkner et al., 2002). For the baccalaureate-seeking students in the study, those whose parents had a graduate degree were most likely to attain a bachelor's degree in six years (67% of public-institution enrollees; 83% of private, not-for-profit enrollees), followed by those whose parents had a bachelor's (62%; 74%), only some college (48%; 58%), with up to a high school diploma having the lowest rates (39%; 54%). Looking at high school sophomores in the year 2002 and following up a decade later, Lauff and Ingels (2013) found a similar pattern. Rates of baccalaureate attainment were 46% when a parent held a bachelor's degree, 59% when a parent held a master's, but only 17% when parents had not attended college. The link between parental education level and postsecondary persistence is longstanding, as Nuñez and Cuccaro-Alamin's (1998) report on students entering college in 1989-90 found persistence rates of 55%, 65%, and 76% respectively for students whose parents had no college experience, some college experience, or earned at least a bachelor's degree.

One possible explanation for observed disparities in attainment between FG and CG students has to do with their patterns of attendance across sectors of postsecondary education

institutions. A College Board analysis of federal postsecondary student survey data found FG students constituted 36% of public two-year institution enrollment, but only 24% of public 4-year enrollment and 19% of private 4-year enrollment (Ma & Baum, 2016). Given that FG students comprise roughly 30% of college students, this finding implies that FG students are overrepresented at two-year publics and underrepresented at 4-year—and especially 4-year private—institutions. Consistent with this implication, Engle and Tinto's (2008) study of low-income, FG students showed they were more likely to attend public, two-year institutions rather than four-year institutions. Students who were neither low-income nor first-generation were just as likely to attend a public four-year institution as they were a public two-year institution. They were also twice as likely as low-income, first-generation students to attend a private, four-year institution (Engle & Tinto, 2008). Given that retention rates for two-year institutions are lower than for four-year institutions (Snyder et al., 2019), the lower attainment rates of FG students is consistent with their lower rates of enrollment at four-year institutions. However, for students whose parents have lower levels of education, federal data show lower degree attainment rates irrespective of whether the students are enrolled at two-year or four-year institutions (Snyder et al., 2016). Of enrollees at two-year institutions, over half of the students whose parents had no college experience had left without a credential. For students with parents having a bachelor's or higher degree, only 40% left without a credential. Forty-four percent of students whose parents had some college experience left without a credential. Of enrollees at four-year institutions, the dropout rate was 35% for students whose parents had no college experience, 28% for students whose parents had some college, and 19% for students whose parents' highest attainment was a bachelor's degree (Snyder et al., 2016). Thus, within both 2- and 4-year institutions, lower levels of parental education correspond to greater rates of college dropout. That is, when holding level

of institution constant, level of parental education is inversely related to departure. As such, FG students are at a disadvantage in persistence irrespective of level of institution.

First Generation: A Unique Predictor of Persistence

A substantial line of research has looked at college student persistence rate differences by parent educational level while also considering competing explanations. Among baccalaureate-seeking students, Chen and Carroll (2005) compared FG students to students whose parents had earned a 4-year degree. Their study controlled for students' background characteristics, high school academic performance, and earned college credits. Even after accounting for these controls, FG students showed lower completion rates. Choy (2001) also looked at baccalaureate degree aspirants. For students whose parents had attained at most a high school diploma, the likelihood of dropout was more than double that of students whose parents had completed at least a bachelor's degree (Choy, 2001). FG attrition rates remained higher even after accounting for ethnicity, gender, high school course performance, and family income. Ishitani (2003) found that the odds of dropping out in the first year of college were over 70 percent higher for first-generation students compared to students with two college-educated parents. The FG effect was net of other factors including race, gender, high school GPA and family income. Warburton et al. (2001) found FG students to persist at lower rates than students who parents had earned a bachelor's degree, even after accounting for student's high school academic record. Similarly, Ishitani (2006) studied a nationally representative sample and concluded that FG students were at elevated risk of dropout even after controlling for gender, race/ethnicity, income, high school performance, and students' and parents' educational expectations. FG students exhibited relatively high first-year dropout, leading to a decrease in persistence rates that held steady over successive years of the study. Ishitani also found that FG students took more time to complete

their baccalaureate degrees. The research of Nuñez and Cuccaro-Alamin (1998) used statistical controls. Specifically, they found the graduation rate of FG students to trail those of non-FG students independently of gender, race/ethnicity, age, and measures of student integration into campus life. More recently, a study of nearly 100,000 students entering 4-year institutions showed parent educational level as a negative predictor of first-year retention after accounting for student gender, minoritized status, parental income, SAT, high school GPA, AP exam participation, and other predictors (Kopp & Shaw, 2016). A separate recent study of 150,000 ACT test-takers found that retention rates were lowest for FG students, after controlling for student characteristics and the institution attended (Radunzel, 2018). Bowen et al.'s (2009) study of flagship and state system public institutions concluded that parental education impacts the probability of student graduation independently of other predictors.

While parent educational level is one of many factors relating to persistence, the work of Chen and Carroll (2005), Choy (2001), Ishitani (2003; 2006), Kopp and Shaw (2016), Nuñez and Cuccaro-Alamin (1998), and Warburton et al. (2001) clearly establishes it as a unique predictor. With research showing that the FG construct represents a challenge to student persistence and graduation across studies—and across the various sectors of higher education that are the sites of those studies—it is demonstrably a factor fundamental to the landscape of higher education persistence research. At the same time, parent educational level is not evenly distributed across individuals' racial/ethnic identification or their family socioeconomic status. Rather, there exist marked patterns that show contrast between FG and CG students along these demographics. An elucidation of these patterns, and their connection to persistence, is illustrative for demonstrating the demographically-related challenges that FG student face as a group.

Race/ethnicity

FG collegegoers are more likely to identify as a students of color (Bui, 2002; Chen & Carroll, 2005; Choy, 2001; Darling & Smith, 2007; Engle et al., 2006; Horn & Nuñez, 2000; Hutchens et al., 2011; Nuñez & Cuccaro-Alamin, 1998; Saenz et al., 2007a; Terenzini et al., 1996; Warburton et al., 2001; Zalaquett, 1999). One study directly comparing race/ethnicity distributions for FG and CG college students found over half of FG and only 30% of CG students identifying as non-White respectively. Specifically, the relative presence of Black/African American students was 14% of the FG and 11% of the CG group; Hispanic/Latino students were 27% of FG but only 9% of CG students. Five percent of FG students, and 6% of CG students, were Asian (Redford & Hoyer, 2017).

The overrepresentation of minoritized students within the FG population follows from the fact that minoritized group membership is related to parental educational attainment. Federal data show that 4% of White parents have a less-than-high-school education, while the respective percentages for Black, Hispanic, Asian, Hawaiian/Pacific Islander, and American Indian/Alaska Native parents are 10, 29, 8, 8, and 10 percent (Kena et al., 2016). Thus, relative to White students, minoritized students' parents are from two to seven times more likely to have attained less than a high school education. The pattern is similar for parental college attendance. Within racial/ethnic categories, the percentage of parents with no college experience is lowest for White (23%), then Asian (24%), followed by Black (41%), American Indian/Alaska Native (42%), Hawaiian/Pacific Islander (50%), and Hispanic (61%) students (Aud et al., 2012). Similarly, data on race/ethnicity and parental college experience cited by Gandara and Contreras (2009) shows that a majority of White and Asian parents have had at least some college experience, while less than half of Black parents —and less than one third of Hispanic parents —had attended college.

These figures indicate that for Black and Hispanic K-12 students, the median level of parental education is less than college while for Asian and White students it is at least some college. The distribution of parental education by racial/ethnic group—and the differences in distribution of race/ethnicity within FG and CG students—indicate that the typical (i.e., modal) FG student is likely to identify as non-White while the typical CG student is likely to identify as White.

Persistence. Considered without respect to any other sociodemographic, psychological, or cultural characteristics, race/ethnicity is strongly correlated with persistence in college. National data from the Department of Education illustrate the link between student race/ethnicity and degree attainment rates. For students starting at four-year (i.e., baccalaureate-granting) institutions, the overall bachelor-degree graduation rate is 58% (Snyder et al., 2016). Disaggregated by race/ethnicity, completion rates are highest for Asian/Pacific Islander (69%), followed by White (63%), multiracial (50%), Hispanic (42%), Black (41%), and American Indian/Alaska Native (39%) students (Snyder et al., 2016). A study exploring the relationship of race and retention to the second year—separately for FG and CG students—found that students identifying as Hispanic were less likely to persist only in the FG group. There was no effect for African American or Asian students within generational subgroup (Lohfink & Paulsen, 2005). While there is an overall dearth of information on graduation rates by joint FG and racial/ethnic categories, the generally lower graduation rates for minoritized racial/ethnic groups—overrepresented among FG students—suggest that FG students are more likely to encounter race-related challenges while pursuing a degree, negatively impacting attainment.

Family Finances

Attending college, and persisting to graduation, can be costly. Tuition and fees (and for residential institutions, room and board), debt accrual, and opportunity costs can present

significant financial hurdles to prospective and enrolled students and families. Thus, a family's financial situation bears strong relationship to student collegiate attainment. Limited family income hinders access to higher education, even for students who are otherwise similar in high school academic performance (Akerhielm et al., 1998; Ottinger, 1991). Financial disadvantage also correlates with other class-related circumstances that present challenges for collegiate success. For example, Raab and Adam (2005) found that low-income and FG students tended to come from under-resourced high schools, leaving them with inadequate information about the college admissions process. Low-income students are more likely to attend high schools that struggle to support college aspirants resulting in lower college attendance rates (Tierney & Colyar, 2009). Students from such high schools who do enroll in college typically receive less support and preparation for the campus experience than students attending high schools in more affluent and privileged communities (Tierney & Colyar, 2009).

Income and other measures of family wealth are lower for FG students than for non-FG students (Bui, 2002; Chen & Carroll, 2005; Choy, 2000; 2001; Engle et al., 2006; Nuñez & Cuccaro-Alamin, 1998; Redford & Hoyer, 2017; Terenzini et al., 1996; Warburton et al., 2001). Looking at national data on financially dependent students, Choy (2000) found that family income increased with higher levels of parental education. Redford and Hoyer (2017) found over three-quarters of FG—but only 29% of CG—students reported a household income of \$50,000 or less. Households with incomes over \$100,000 were 27% of the CG group but only 2% of the FG group. Information on Pell (i.e., an income-based grant) recipients shows a pattern similar to income. Data from a national survey of first-time students pursuing a bachelor's degree showed over half (56%) of FG students claimed to receive Pell funds, while only 20% of CG students identified as Pell recipients (Eagan et al., 2015). Thus, unlike the typical CG student, the typical

FG student qualifies for a Pell grant. Eagan et al. (2015) also found a greater percent of Pell recipients relying on loans—which require repayment—to finance college attendance. In general, FG students take out more loans, and at higher dollar levels, than CG students (Furquim et al., 2017). Students taking out loans to pay for college may be more likely to evaluate whether persisting is worth the cost of attendance and the loan payments. For these students, accrual of loan debt may be seen as prohibitively expensive, increasing the risk that they leave college. With fewer family assets available for college costs, FG students are also more likely to work while in college (Burdman, 2005; Christou & Haliassos, 2006; Engle & Tinto, 2008). The burden of working while pursuing a degree may also be stressful, and may negatively impact persistence.

Financial challenges can interfere with students' ability to find their place within the campus environment (Aries & Seider, 2005; Bean, 1985; Milem & Berger, 1997), especially at institutions that also serve wealthier students (Aries & Seider, 2005). Of FG students, those from lower-income background face greater challenge in the transition and adjustment to college than middle-income students (Richardson & Skinner, 1992; Thayer, 2000). Research probing more deeply at demographic and other issues facing FG students confirmed that income-related challenges affected both White students and students of color (Jenkins et al., 2009). However, Rendón (1995) concluded that the process of transition and adjustment to college can present a greater challenge for low-income students of color. These findings underscore the importance of capturing financial variables when studying the experiences and challenges of FG students.

Persistence. For college students, higher levels of financial challenges related to SES and income have been shown to reliably and negatively correlate with persistence (Pascarella & Terenzini, 1991, 2005; Reason, 2009; Walpole, 2003). National data demonstrate that degree

attainment rates vary by student income level. For students starting at a four-year institution, degree completion rates by income quartile (using student income for independent students, and family income for dependent students) show fewer than half (42%) of lowest-quartile students earning a four-year degree. For second-, third-, and top-quartile students, bachelor's attainment rates grow to 52%, 61%, and 74% respectively (Snyder, de Brey, & Dillow, 2016). Examining both first-year persistence rates as well as six-year graduation, Engle and Tinto (2008) found the lowest levels of retention and degree attainment for FG, low-income students. Such students were almost four times as likely to not enroll for their second year (26%) relative to students who were not FG nor low income (7%). Six years after initial enrollment at 4-year not-for-profit public and private institutions, students who were both FG and low income were more than twice as likely to have dropped out relative to continuing-generation, higher-income students. Employing a national sample of baccalaureate aspirants, Trusty and Niles (2004) found a positive relationship between bachelor degree receipt and a SES index created from family income, parents' educational level, and occupational prestige. Specifically, for each standard deviation increment in SES, the odds of degree completion increased 64%. Although this SES index conflated income, parents' educational level, and occupational prestige the finding is consistent with the proposition that financial privilege advantages one's probability of college completion. These studies show that as family income rises, the likelihood of graduation rises.

The interaction of FG status with socioeconomic attributes as it impacts first-year persistence was evidenced in a national study of baccalaureate-seeking students. Total family income of FG students was found to relate positively with retention; each \$10,000 increment in income was associated with a 2% greater change of persistence to the second year. For continuing-generation students, the relationship of finances to persistence was not statistically

significant (Lohfink & Paulsen, 2005). Graduation-rates data also show differential effects for FG and non-FG students. For matriculants at 4-year institutions, disaggregation of federal graduation-rates data by FG and low-income categories show that baccalaureate attainment within six years of entry is lowest for low-income, FG students (41%). The rate increases to 54% for FG students who are not low-income, and to 56% for those who are not FG but are low-income. The graduation rate for non-FG, non-low-income students is highest at 73% (Cahalan et al., 2018). With 59% of low-income, FG students not completing a baccalaureate degree within six years—and only 27% of students bearing neither of these disadvantages failing to complete—Cahalan et al. (2018) establishes that co-occurrence of lower parental education level with lower incomes increases the risk of college dropout and non-completion.

FG students' own recounting of their financial challengers in relation to funding a college education are consistent with the picture painted by national data. Sánchez et al. (1992) found that money issues were frequently cited as a reason for leaving college. Castellanos and Jones (2003) indicated that financial concerns were a primary determinant of persistence for FG students. A more recent study of students who left college without earning a degree found that 54% of FG students reported that they could not afford to stay enrolled, while only 45% of CG students cited the same concern (Redford & Hoyer, 2017). While not all FG students face financial challenge, the evidence across studies clearly indicates that financial concerns have disparate, negative impact on the persistence of FG students. It is appropriate and necessary that measures of students' financial situation—and their outcomes in relation to those circumstances—are represented in studies and models of FG retention.

First-Generation College Students

First-generation students will continue to comprise a sizable portion of the U.S. collegegoing population (Skomsvold, 2015). Their success in college and ultimately with graduating is significant for them, for the postsecondary educational system, and for the larger society (Davis, 2010; Engle & Tinto, 2008; Ma et al., 2019). However, their likelihood of completing college trails that of continuing-generation college students (Cataldi et al., 2018). Several factors play a role in this disparity. Demographically, FG students are more likely to identify as students of color, and come from economically disadvantaged backgrounds (Redford & Hoyer, 2017). As a whole, they are less academically prepared for college, as measured by their high school record and board scores (Redford & Hoyer, 2017; Warburton et al., 2001). Additionally, FG college students share a set of circumstances related to their parents' relatively low educational attainment. Because their parents have relatively little familiarity and experience with college, FG students have less opportunity to learn about college from those who have already been there and who have succeeded there (Ward et al., 2012). Once attending college, FG students may be more subject to ongoing family-related expectations and responsibilities, which can interfere with their role as a student (Covarrubias et al., 2019; Wilbur & Roscigno, 2016). The academic, social, operational, and cultural aspects of campus may feel especially unfamiliar to FG students, increasing the challenge of transitioning, adjusting, and acclimating to college (Davis, 2010; Ward et al., 2012). All of these characteristics can also lead to elevated levels of stress (Davis, 2010; Gist-Mackey et al., 2018). These experiences and psychological outcomes may negatively impact the persistence of FG students (Amirkhan & Kofman, 2018; Saunders-Scott et al., 2018). This section reviews these circumstances and challenges, starting with a discussion of how first-generation is defined in terms of parental educational level.

First-generation: Definition

In a literal and uncomplicated sense, FG students are “first” as they are without generational predecessor in terms of their families’ prior collegiate experience and attainment. The role of “first” implies an act of trailblazing; FG students experience and endure the trials of navigating an unfamiliar path to, into, and then within college (Balemian & Feng, 2013; Darling & Smith, 2007; Pascarella et al., 2004). For FG students, grappling with the novelty and challenges presented by postsecondary pursuits—including separation from family as well as from familiar environments and experiences—present significant obstacles for college attendance and persistence.

First generation: Definitions in the Literature. A definition of first-generation is served through consideration of what exactly constitutes “first” in terms of a student’s and family’s extent of prior experience and attainment in the realm of higher education. At present, the literature is inconsistent in defining the first generation college student (Peralta & Klonowski, 2017; Toutkoushian et al., 2018), apart from a general consensus that parental education is the defining metric. FG college students are often identified as those whose parents have no college experience, or alternatively as those whose parents have not earned a baccalaureate degree. However, some studies classify students as FG if their parents only have some college, or have no postsecondary credential. There exist additional definitions beyond these. The variation in definitions evidences that some researchers exercise choice when deciding how to classify students as FG or CG while others, especially those using secondary data (Peralta & Klonowski, 2017), adopt whatever convention is available to them in the data that they are working with.

An examination of the literature on FG college students demonstrates the breadth of FG definitions. Many studies define FG as students who come from families with no prior parental

college attendance (e.g., Arbona & Nora, 2007; Balemian & Feng, 2013; Billson & Terry, 1982; Choy, 2001; Chen & Carroll, 2005; Covarrubias et al., 2015; DeAngelo et al., 2011; Dumais & Ward, 2010; Eagan et al., 2015; Gibbons et al., 2019; Horn & Nuñez, 2000; Hsiao, 1992; Inkelas et al., 2007; Ishitani, 2006; Javine, 2013; Jehangir, 2010b; Kim & Sax, 2009; Lohfink & Paulsen, 2005; London, 1989; Longwell-Grice & Longwell-Grice, 2008; Nuñez & Cuccaro-Alamin, 1998; Philippe, & Valiga, 2000; Pascarella et al., 2004; Redford & Hoyer, 2017; Riehl, 1994; Somers et al., 2004; Terenzini et al., 1996; Trevino, & DeFreitas, 2014; Warburton et al., 2001). This definition is common. At the other end of the parent-education continuum is first-generation defined as neither parent or guardian completing at least a baccalaureate degree—also a commonly-found definition (e.g., Banks-Santilli, 2014; Collier & Morgan, 2008; Harackiewicz et al., 2014; Havlik et al., 2017; Ishitani, 2016; Jehangir, 2010a; Jenkins et al., 2013; Garriott et al., 2015; Jenkins et al., 2013; Jury et al., 2017; Olson, 2014; Pike & Kuh, 2005; Pratt et al., 2017; Soria & Stebleton, 2012; Soria et al., 2013-14; Stebleton et al., 2014; Stephens, Fryberg, et al., 2012; Stephens et al., 2014; Stephens, Townsend, et al., 2012; Stephens et al., 2015; Stuber, 2011; Thayer, 2000; Wilbur & Roscigno, 2016). The federal TRIO programs also define FG students as those whose parent(s) or guardian(s) have not receive a baccalaureate (Dortch, 2018). More encompassing than the no-college definition, the no-baccalaureate criterion includes adults with some college as well as those with no college, and thus identifies a greater number of college students as FG.

Additional, less-common classifications also exist. FG has been defined as families where: parents lack postsecondary education or training (Gibbons & Woodside; 2014); parents have up to some college (Elkins et al., 2000); neither parent has less than one full year of college (Hertel, 2002); the student is first to attend a four-year institution (Barry et al., 2009); neither

parent has a postsecondary degree (Furquim et al., 2017; Ishitani, 2003); neither parent has a postsecondary credential (Spiegler & Bednarek, 2013); neither parent graduated from a college or university (Grant-Vallone et al., 2003-2004); neither parent has at least an associate's degree (Aspelmeier et al., 2012; Museus et al., 2017); and parents have not completed college (McKay & Estrella, 2008; Mehta et al., 2011). A few definitions lack specificity (e.g., "some college"), rendering such studies more difficult to interpret in terms of parental educational level. Engle et al. (2006) explicitly acknowledge variation in parental educational level in their definition, classifying FG as "students whose parents have not attended college and/or have not earned a college degree" (p. 13). A full listing of all FG definitions across various academic and other literatures would be a daunting task; a recent research piece exploring FG definitions stated that a large number of studies invoke the FG/non-FG distinction but there is no agreed-upon definition (Toutkoushian et al., 2018). Also unexplored is how the educational attainment of each individual parent, as well as non-parental family members, might factor into a FG definition. How do siblings, non-biological parents, extended family, and family friends with college attendance or degrees figure into a definition? At present, such questions of measurement and definition remain unaddressed.

Parent Education: Binary or Continuum? While parental postsecondary educational level—at its most granular—is measured on a P-20 continuum of years of schooling, FG in the literature is usually defined as a dichotomy—i.e., as an either/or categorization. However, various binary definitions of FG—each constructed from a different cut point on the continuum of parental education—should not be interpreted as equivalent or interchangeable. Different cut points will produce differing amounts of parental educational attainment within the FG and CG groups so defined. Given that parents' level of education is measurable in years (or, less

coarsely, by level of educational attainment such as high school diploma, associate's degree, etc.) a binary conceptualization of FG is limiting. A multi-level classification scheme could afford better sensitivity for assessing the impacts of parental education.

There is precedent and rationale in the literature for treating parental education level not as a binary, but as a more-nuanced, multilevel measure (Spiegler & Bednarek, 2013). Examples of exceptions to the binary method include Horn (1998), Nuñez and Cuccaro-Alamin (1998), and certain government reports (e.g., Cataldi et al., 2018) that define a three-level grouping: parents have no college, have some college, or hold a bachelor's or advanced degree. Based on a survey of college students including data on the highest educational level of either of their parents, Lee et al. (2004) derived five categories of parental education ranging from junior high school to graduate school. Lee et al. found significant differences across these categorizations in terms of students' views and experiences such as their difficulty with the English language and their perceptions that grades reflected learning. Looking at rates of college enrollment by parental educational level, Toutkoushian et al. (2018) identified eight different levels of parent education and recommended that researchers should consider how their definition of FG may relate to or affect their own research and findings.

When parental education is grouped into three levels (no postsecondary education, some college, and parents earned a bachelor's degree), group differences are observed in academic preparation for college and in college persistence. On these measures, the no-postsecondary-education and some-college groups are more similar to each other than to the parents-earned-a-bachelor's group. In high school, the respective percentages for those taking an academically-focused curriculum are 16%, 19%, and 37%; those earning Advanced Placement (AP) or International Baccalaureate (IB) credits are 18%, 22%, and 44%; and those taking calculus are

7%, 9%, and 22% (Cataldi et al., 2018). Looking at a college qualification index for groups defined comparably to those of Cataldi et al. (2018), Choy (2001) reported a similar pattern. Of students whose parents had no postsecondary education or had some college, 19% and 31% respectively were “very highly” or “highly” qualified while 56% of students whose parents had earned a bachelor’s degree reached at least the high level of qualification (p. xxv).

Persistence in college shows a similar pattern. Three years after matriculation, Cataldi et al. (2018) reported the no-postsecondary-education, some-college, and parents-earned-a-bachelor’s persistence rates as 48%, 53%, and 67% respectively. For bachelor’s degree-seeking groups defined similarly to Cataldi et al. (2018), Choy (2001) cited dropout rates of 28%, 25%, and 14%. Berkner et al. (2002) reviewed baccalaureate graduation rates. For private institutions, the no-postsecondary-education, some-college, and parents-earned-a-bachelor’s graduation rates were 39%, 48%, and 62%; for public institutions they were 54%, 58%, and 74%. Similarly, Lauff and Ingels (2013) examined attainment rates by parental educational level and found that the greatest jump in bachelor’s degree recipience was between the some-college and bachelor’s-degree groups. Given these findings, college student persistence researchers who continue to construct FG as a binary should give careful consideration as to what level of parental education is included and excluded in their definition—and the definition should be made explicit when reporting research results.

First-generation: Definition. In demonstrating an incremental correspondence between levels of parental education and student graduation rates, Berkner et al. (2002), Cataldi et al. (2018), Choy (2001), and Lauff and Ingels (2013) establish the merit of conceptualizing parental education as a multipoint scale. Such refinement enables a more accurate and thorough understanding of the connection between parental education and student persistence. Within a

multipoint construction, persistence data demonstrate that college students whose parents earned a bachelor's degree are statistically most separate from students whose parents did not reach the baccalaureate level of attainment. The separation of the bachelor's-educated parent from parents with less educational attainment in Cataldi et al., (2018) and Choy (2001) informed the decision in this study to define FG students as those whose parents earned less than a bachelor's degree. This study additionally examined the impact of parental education in the range of less than high school to attainment of an associate's degree.

First-generation Students and Resilience

The term *resilience* connotes flexibility or hardiness. As applied to the study of human functioning under conditions of difficulty or challenge, it has been defined as the ability to cope with adversity (Connor & Davidson, 2003; Richardson, 2002), to function competently or thrive under trying conditions (Johnson et al., 2015; Masten, 2001), or to achieve good outcomes when facing challenges that would predict negative results (Kitano & Lewis, 2005). The pursuit of a college degree may relate to any or all of these descriptions. College students from diverse or economically underprivileged backgrounds—circumstances typical of many FG students—have often developed strong coping skills, aspirations, experience-related abilities, perspectives, and other strengths-based strategies before entering college, borne of adapting and succeeding under challenging or adverse conditions and experiences related to their backgrounds (Hébert, 2018; Kitano & Lewis, 2005; O'Shea, 2016; Richardson & Waite, 2002; Schelbe et al., 2019). Various coping strategies, competencies, and motivations—strengths possessed by individuals, and directed towards overcoming challenge and adversity—comprise forms of resilience (Connor & Davidson, 2003; Hébert, 2018; O'Shea, 2016; Yosso, 2005), and drawing upon them can be critical to success in the often-challenging college environment (Hartley, 2011; Hébert, 2018).

Resilience. The concept of resilience within behavioral science grew out of an earlier, strengths-based re-conceptualization of psychological constructs and theory, and their relationship to human functioning. Prior to the strengths-based movement, inquiry into psychological functioning had been informed through a near-exclusive focus on abnormal psychology, psychopathology, and human weakness—a disease model, with a focus on healing and the cessation of a diseased condition (Lopez & Gallagher, 2009; Norman, 2000; Rutter, 1987; Seligman & Csikszentmihalyi, 2000). The strengths-based orientation to psychology can be traced back to Maslow’s (1954) introduction of the term *positive psychology* and his description of a scientific approach for understanding individuals’ “potentialities, ...virtues, ...achievable aspirations, or ...full psychological height” (p. 354). Resilience is a concept consistent with positive psychology (Siebert, 2005), and it is rooted in a strengths-based framework (Chung, 2008; Norman, 2000). It can be viewed as an “inherent attribute of grit” and as such, is facilitative of “perseverance and passion toward long-term goals” (Duckworth et al., (2007; Stoffel & Cain, 2018, p. 125). Thus, resilience serves as an aid to better human functioning and goal attainment.

In contemporary usage, resilience is generally understood and studied as the processes of adaptation to challenging environments and experiences (Herrman et al., 2011). In early conceptualizations and research, it was viewed as an individual trait that surfaced in reaction to an acute, distressful event or circumstance and drew upon one’s constitution, mental faculties, and similar personal resources to overcome the adversity (Herrman et al., 2011). As theory and research on resilience grew, it came to be viewed through developmental and ecological lenses—as evolving and changing over the course of one’s lifespan in reaction to specific external stressors and hardships, and subject to influence by social entities including family and

community. As such—in a conceptual sense—resilience is most broadly defined as recovery or maintenance of health in the face of adversity (Herrman et al., 2011; Stoffel & Cain, 2018). However, its operationalization varies according to the specific application or research setting in which it is evoked (Cassidy, 2015; Herrman et al., 2011). As such, it is imperative that studies on resilience define the term and contextualize its usage with respect to the particular theoretical or research project at hand (Liddle, 1994; Riley & Masten, 2005; Waxman et al., 2003). In this way, scholars have enjoyed considerable latitude in how they construct and define resilience, and how they apply it in their particular research.

Resilience as Goal Commitment. Waxman et al. (2003) described educational *resilience*—i.e., student resilience in the context of education—as characteristic of students “who succeed in school despite the presence of adverse conditions” (p. 1). Cassidy (2015), citing Wang et al. (1994), defined *academic resilience* as “an increased likelihood of (academic) success despite environmental adversities.” (p. 2). While educational resilience refers broadly to education-related endeavors while academic resilience is more narrowly focused on course performance, both Waxman et al. (2003) and Cassidy (2015) assert that an important agenda for educators is to identify ways to tap into and foster educational resilience in students to enhance their success.

Resilience has been conceived as commitment to an important cause or goal (Kobasa, 1979) including goals related to education (Benard, 1993; McMillan & Reed, 1994). Rutter (1985) identified resilience as encompassing well-defined goals and objectives that held high importance to the individual. Benard (1993) included “educational aspirations” and “persistence” (p. 44) as specific facets of resilience. Based on a factor analytic study, Connor and Davidson (2003) determined that one’s belief in, and work towards, goal achievement was a significant,

defining aspect of resilience. Studying low-income FG students, Mbindyo (2011) identified goal-setting and resourcefulness as important facets of academic resilience. Similarly, Cavazos et al.'s (2010) study of eleven Latina/o college students—including nine FG students—found that educational goals were an important aspect of resiliency for each student. McMillan and Reed (1994) identified student goals, and family expectations that the student would pursue those goals, as separate but connected elements of resiliency. Silvia et al. (2013) suggested that individuals high in resilience accorded greater importance to goals, while Bowman et al. (2015) implied that task importance plays an importance role in predicting college students' intent to persist. The present study adopts these goal-oriented conceptualizations of resilience, and defines it as the degree to which the goal of graduating from the attending university is important to the student and to the student's family.

Resilience and Academic Outcomes. Empirical research has examined the connections between resilience and academic outcomes. Studies specifically exploring the connection between resilience and college GPA have generally found positive relationships. Duckworth et al. (2007) utilized a measure of grit and found it moderately correlated with GPA. Interestingly, grit was negatively related to SAT score, leading the researchers to suggest that grit may compensate for low SAT when both factors relate to college success. Enlisting a sample of undergraduate students, Johnson et al. (2015) tested a path model for college GPA. Results showed that resilience only indirectly (through self-regulatory strategies such as time management) predicted GPA; the relationships were positive. Hartley (2011) employed various measures of resilience as predictors of college GPA. Tenacity resilience (e.g., working to attain goals) was positively related to GPA, but stress-tolerance resilience (e.g., handling unpleasant feelings) was negatively associated with GPA. Hartley surmised that a high stress-tolerance

resilience indicated actual stressful experiences, with an associated negative impact on GPA. Sweet et al.'s (2019) study of a freshman cohort found resilience positively but only modestly related to both fall and following-spring GPA (r values were .11 and .15 respectively); the relationship between fall and spring GPA was much stronger ($r = .90$).

The impact of resilience on persistence has also been examined. Duckworth et al. (2007) and Duckworth and Quinn (2009) showed that “perseverance and passion for long-term goals” (Duckworth & Quinn, 2009, p. 1087) positively and significantly predicted student retention and degree attainment in college. For a sample of undergraduate business students attending a university in Spain, two measures of resilience—hardiness and resourcefulness—each were positively related to the ratio of credits earned to credits taken (Ayala & Manzano, 2018)—providing evidence that resilience is positively related to academic progress. They also found hardiness and resourcefulness to be greater among persisters than leavers. Pascarella and Chapman (1983) asked students if it was important that they graduate from their current institution, and graduate from college. Reported degree of importance significantly discriminated persistence from withdrawal for the students in their study. Though Pascarella and Chapman did not explicitly invoke resilience, their two measures are similar to the formulation of resilience in the current study. For first-year undergraduates at one college, a measure of desire to graduate positively predicted persistence for students of color, but not non-minoritized students—demonstrating that desire to succeed may be more critical to success for students from underserved backgrounds (Allen, 1999). Robbins et al. (2004) found academic goals—including “commitment to attaining the college degree” (p. 267)—more predictive of retention than GPA, though academic goals were positively and significantly related to each. Robinson interpreted academic goals as capturing students’ valuing of a college degree rather than gauging resilience.

However, Markle and Rikoon (2018) interpreted Robinson's results as indicating the importance of effort, tenacity, and overcoming challenges—qualities akin to resilience—for student success including GPA and persistence.

Research examining resilience and college outcomes for FG students is limited. Reviewing correlates of college GPA and persistence for a sample of low-income FG Latinx students, Mendez and Bauman (2018) found that academic resilience—defined as the ability to deal with challenge and adversity—was positively related to GPA net of high school GPA, financial aid, and other factors. However, resilience was not significantly related to persistence after controlling for high school GPA and other academic variables, concurrent employment, financial aid, family responsibilities, and other factors. Mendez and Bauman concluded that for the FG low-income students they studied, non-academic situational factors carried more significance in students' persistence decisions than did socio-cognitive factors.

By exploring the role of resilience within a broader, psychological framework of college student retention, this study sheds light on how resilience relates to FG students' perceptions of their college environment and interactions, psychological outcomes and attitudes, and their persistence intentions and behavior at a prestigious, residential, private institution. According to Munro and Pooley (2009), relationships between challenges and success in college may be mediated by resilience, and they call for additional research to examine the impact of resilience on academic progress and completion. The question of whether resilience exerts direct effects on satisfactory academic progress and persistence, or rather is mediated by other constructs—within a psychological retention framework—is addressed by the current study. Both Cassidy (2015) and Walker et al. (2006) suggest that supporting and fostering academic resilience is of critical importance for increasing retention and educational attainment. This research also has the

potential to inform practitioners supporting students—and guiding development of programs—in ways that bolster or supplement resilience, to foster student agency and success.

First-generation Students and Selective, Private Residential Institutions

A first-generation student's decision to attend postsecondary education may rest upon one or more motives. For example, going to college may be a parental expectation. Individuals may aspire to leadership positions in the community, with college providing necessary or beneficial preparation. Gaining expertise or becoming an expert in a given field may be a goal. For many, job security is a paramount consideration. For others, going to college is an avenue to fiscal prosperity (Nuñez & Cuccaro-Alamin, 1998). Indeed, graduating college with a degree offers a means to financial security; individuals holding a college degree realize higher annual income than those without (Baum et al., 2010; Kena et al., 2015; Zaback et al., 2012). Increasingly, getting a good job is cited by postsecondary students as the primary motivator for attending college (Selingo, 2018). This is particularly true of FG students, who are more likely to go to college to gain financial prosperity and to view college attendance primarily as a necessity for achieving their goal of an improved lifestyle (Darling & Smith, 2007; Longwell-Grice, 2003; Longwell-Grice et al., 2016; Nuñez & Cuccaro-Alamin, 1998). Data from Nuñez and Cuccaro-Alamin (1998) suggest that FG students' desire to be well off financially relates in part to being able to provide their own children with more educational and career opportunity.

If students' objectives in going to college includes increased earnings, then institutional selectivity (i.e. the percent of applicants admitted) matters, as attending selective institutions offers benefits that relate to student success (Franco & Kim, 2018; Pérez & Ceja, 2015). Per student, more-selective institutions outspend less-selective institutions by a factor of four (Carnevale & Rose, 2003). This translates into increased availability of student supports at more-

selective institutions, higher graduation rates, and higher wages in the job market (Carnevale & Rose, 2003). Specifically, the salaries of graduates from highly selective institutions are at least ten percent higher than the salaries of those who graduate from less selective institutions (Witteveen & Attewell, 2017).

Selectivity is also associated with graduation rates, as is institutional proprietorship. At the most selective public institutions the graduation rate exceeds 80% while at highly selective private nonprofit institutions the rate exceeds 90% (Snyder et al., 2019). However, at both private and public universities, the graduation rates of FG students trail those of CG students by double digits (DeAngelo et al., 2011). The disparity in persistence and attainment holds for selective and private institutions (DeAngelo et al., 2010; Snyder et al., 2019), where FG enrollment is also underrepresented relative to CG enrollment (Lohfink & Paulsen, 2005; Radunzel, 2018; Redford & Hoyer, 2017)—reflecting challenges facing FG students in accessing and attending selective institutions (Aries & Seider, 2005; Roska et al., 2020). The relatively low completion rates of FG students at selective institutions thwarts their objectives—obtaining a good job and a satisfactory lifestyle, and providing more for their children. At highly selective, private institutions—which achieve the highest graduation rates, and thus the greatest opportunity for financial success—FG students’ lower likelihood of graduation blunts the promise of success and goal fulfillment that such institutions present. Yet, most research focused on FG college students’ educational experiences is conducted at public institutions (e.g., Hertel, 2002; Inkelas et al., 2007; Orbe, 2004)—perhaps a reflection of the fact that FG students are least likely to attend prestigious, private universities (Rine & Eliason, 2015). Berger and Milem (1999) utilized a theoretical retention model to study the correlates of persistence at a highly selective, private, residential research university, finding that retention was related to students’

entry characteristics and their on-campus experiences. However, the study was not focused on FG students. By uncovering and exploring the challenges FG students face within the context of a selective, private residential university, efforts can be developed and directed towards support of such students thus enabling these institutions to more effectively serve them.

First-generation Students and Support Programs

The federal government's TRIO programs—established to assist low-income, FG college students in the face of financial, cultural and social challenges—are designed to provide personal attention and support to the students they serve. Where research has examined support programs for FG students at private institutions, it has shown that such programs are successful. A quantitative study using national data to compare educational attainment for TRIO participants and low-income, FG non-participants found that baccalaureate attainment rates, and graduate enrollment rates, were higher for those in the TRIO program. When public- and private-institution TRIO programs were compared on these two outcomes, rates were higher for private institutions (Balz & Esten, 1998). A review of TRIO-related studies affirmed the benefit of assisting low-income, FG students with administrative tasks such as obtaining financial aid, and with introducing them to campus life, which lead to greater connectedness to the institution and increased persistence (Pitre & Pitre, 2009). Qualitative research has also spotlighted the benefits of intensive programs such as TRIO for assisting FG students in developing a sense of belonging on campus through relationships with program staff and through peers who are also participating in the program (Stuber, 2011).

Though effective, support programs for FG students rely on governmental, institutional, and other sources of support for their continued operation. Though programs such as TRIO enable the success of thousands of college students, demand exceeds capacity and many in need

are turned away. One way to secure ongoing support is to continue research that points to “specific areas for program enhancement and increased program effectiveness” (Pitre & Pitre, 2009, p. 108). The present study’s focus on FG students’ experiences, stressors, and attitudes—and how these relate to persistence—is one such line of inquiry having the potential to suggest new and specific practices for programs to best provide support for FG students.

Campus Climate

Demographically, colleges and universities continue to become increasingly diverse (Parker, 2019), a trend reflecting immigration, increased access for students of color and additional underserved groups, and concerted efforts on the part of institutional leadership to increase diversity (Denson & Chang, 2009; Lo et al., 2017). Postsecondary education institutions endeavor to provide opportunity, and economic and social mobility, for individuals of all backgrounds. Colleges and universities continue to strive towards levels of campus diversity that are consistent with the diversity of the larger society. Consistent with the educational missions of many higher education institutions, students benefit from interacting with diverse others coming from various racial/ethnic, class, and additional backgrounds (Bowman & Park, 2015; Chang, 2001; Chang et al., 2006; Hurtado, 1997; Pascarella et al., 2014; Sidanius et al., 2008). Whether diversity interactions occur within classrooms or in less formal settings such as residence halls, they correlate positively with students’ civic-mindedness and with their acceptance of others who differ racially and ethnically from them (Gurin et al., 2002; Gurin et al., 2004; Hurtado, 1997). Diversity experiences also equip students to work more effectively with diverse others while in college, and also later in the workforce (Battistoni & Longo, 2005; Chang, 2001; Denson & Chang, 2009; Hart Research Associates, 2010). A diverse campus makes possible the richness of

interactions and experiences that lead to student learning and growth, an ideal first espoused by higher education visionaries over a century ago (e.g., Dewey, 1916).

The climate at colleges and universities should be such that it is perceived as welcoming and inclusive for all who attend. Campus climates vary according to their degree of inclusivity or exclusivity, comfort or discomfort, supportiveness or unsupportiveness, and hospitality or hostility (Hurtado et al., 1999). Campus climate affects how students experience the academic and social contexts of college (Swail et al., 2003). The positive and negative ways in which students perceive and experience their college campuses bear relationship to the degree of connectedness that they feel towards their institution (Aries & Seider, 2005; Coffman, 2011; Constantine & Barón, 1997; Duggan, 2001; Hurtado & Ponjuan, 2005; Johnson et al., 2011; Johnson et al., 2014; Lehmann, 2007; Nuñez & Cuccaro-Alamin, 1998; Stuber, 2011; Terenzini et al., 1996; Tinto, 1993; Tovar et al., 2009) and in turn, to their decision to remain in or depart from the institution (Adelman, 2007; Bean, 1985; Bergerson, 2007; Billson & Terry, 1982; Johnson et al., 2014; Lehmann, 2007; Tinto, 1993). Because campus climate is important to college student success, and because students' perceptions of climate relate to their feelings of connectedness and can ultimately relate to persistence, inclusion of campus climate in retention models is necessary if persistence is to be studied comprehensively (Baird, 2000; Hurtado, 1992; Hurtado & Carter, 1997; Museus, 2014).

Campus Racial Climate

Postsecondary educational institutions exist within broader society, and they are not immune to its history and related challenges. This includes race and racism. Race is a social construction, and as such is a othering mechanism to segregate and exclude (Omi & Winant, 1986). As such, race bears a profound relationship to college access and success. Race-related

discrimination has historically occurred, and continues to occur, on college campuses (Bauer-Wolf, 2017; Hurtado et al., 1998; Owens et al., 2010; Pfeifer & Schneider, 1974; Solórzano et al., 2000, Yosso, 2006; Yosso et al., 2009). The blatant prejudice and bias that some students of color have encountered on campus has proved to be unlike anything they had encountered previously—and led them to feel even more like outsiders in a White world (Feagin & Sikes, 1994). As a whole, college and universities have been described as deficient in racial climate for students of color (Langhout et al., 2007; Reid & Radhakrishnan, 2003; Richardson & Skinner, 1992; Terenzini et al., 1996). Race is central to a consideration of FG college students and their experiences at American higher education institutions (Squire, 2013).

Students' perceptions of the campus climate vary by their racial/ethnic identity (Ancis et al., 2000; Helm et al., 1998; Hurtado, 1992; Hurtado & Carter, 1997), and students of color consistently rate the campus climate—including the racial climate—more negatively than their White peers (Allen, 1992; Ancis et al., 2000; Helm et al., 1998; Hurtado, 1992; Hurtado et al., 1999; Lo et al., 2017; Nora & Cabrera, 1996; Rankin & Reason, 2005; Reid & Radhakrishnan, 2003). Racism does not need to be highly visible, explicit, or even intentional to cause harm to those upon whom it is directed. As perpetration of overt expressions of racism can subject the perpetrator to high risk of censure and community opprobrium—which serves as a mechanism to suppress overt racism—less visible forms are less likely to incur social checks, and therefore see freer expression. In Charles et al.'s (2009) nationally representative sample of collegegoing students, Asian, Black, and Hispanic students were more likely than White students to report being made to feel self-conscious of their race or ethnicity from classmates, professors, or just walking around campus. Students of color were also more likely to hear derogatory remarks about race from other students. A recent national survey found that Black individuals who had

attended college were *more* likely to report experiences of racial discrimination than those who had not attended (Pew Research Center, 2016), a further testament that a college can feel unwelcoming and exclusionary for students outside of its demographic mainstream.

As recently as November 2019, episodes of hate have rocked U.S. college campuses (Karimi, 2019). Incidents included graffiti, social media posts, and representations of nooses. Other, less explicit or less intentional forms of racism also occur on college campuses. Solórzano et al. (2000), Yosso (2006), and Yosso et al. (2009) discuss microaggressions as incidents of subtle aggression committed by White individuals and directed at persons on the basis of race. These authors find that demeaning, microaggressive acts are experienced frequently by students of color within academia. The psychological toll of repeated traumatic experiences such as microaggressions are cumulative, and can lead to significantly heightened and chronic stress for those subjected to it (Buchanan et al., 2009; Green et al., 2000). Whether overt or subtle, experiences of racism can have deleterious psychological impacts for both White student and students of color (Buchanan et al., 2009) and can also negatively impact persistence (Cabrera et al., 1999; Johnson et al., 2014; Loo & Rolison, 1986; Yosso, 2006). Experiences of racism lead to perceptions of a hostile racial climate, especially for minoritized students (Owens et al., 2010). Students of color attending a PWI, and who endure a marginalized experience through a poor racial climate, often experience feelings of isolation, discontent, and stress (Buchanan et al., 2009; Keels, 2013). Minoritized students perceiving a negative racial climate are less likely to feel connection to, and satisfaction towards, the institution (Charles et al., 2009). Under circumstances of isolation, disconnection, and discontentedness they may decide to leave college. This study included data on students' race- and diversity-related experiences and

perceptions, enabling analysis of the impacts of campus climate on persistence and other outcomes.

Sense of Belonging

A principal means through which climate exerts its effects on academic outcomes is through sense of belonging, the degree to which a student feels connected to, and a member of, the campus community at a given institution (Hurtado & Carter, 1997; Johnson et al., 2007). An institutions' climate—as perceived through the students experiencing it—are determinants of sense of belonging. Hurtado and Carter (1997) put forth the sense-of-belonging construct in part as an alternative to the academic and social integration constructs of Tinto (1975; 1993), which emphasize students' acclimation to the dominant academic and social systems of a higher education institution.

Sense of belonging has been conceived as a unidimensional (e.g., Hurtado & Carter, 1997; Johnson et al., 2007) as well as a multidimensional (e.g., Hoffman et al., 2002–2003) concept. Research depicting belongingness as unidimensional includes such terms as *belonging* and *member* among the items that measure the construct; these studies also tend to employ additional scales capturing experiential and climate-related perceptions that complement sense of belonging (e.g., Bowman et al., 2019a; Freeman et al., 2007; Hurtado & Carter, 1997; Johnson et al., 2007; Maramba & Museus, 2013). Where sense of belonging has been formulated as multidimensional, measures of it have included content on a broad range of student experiences such as extent of peer and faculty interactions or comfort with seeking support from others that—while not outwardly measuring belongingness per se—capture events that are precursors to, or are associated with, a sense of belonging (Hoffman et al., 2002–2003). Whether specific studies construe sense of belonging narrowly or expansively, the most comprehensive

approaches to research capture students' experiences, interactions with faculty and peers, and perceptions of climate in addition to their feelings of belongingness. Employing variables capturing a broad set of students' experiences permits the fullest examination of interrelating factors that may predict persistence. The present study included such measures.

Impacts of Campus Climate

Student's climate-related experiences with faculty, peers, and the campus environment have been shown to correlate with outcomes including sense of belonging. Student wellbeing as a function of sense of belonging has been examined as well, as has satisfaction with college. Several studies have also connected students' perceptions of climate to persistence. Research exploring the interrelationships of these factors specifically for FG students is limited.

Sense of Belonging. Across various race/ethnicities of first-year students, a positive college environment and positive perceptions of the campus racial climate in general relate to greater sense of belonging while negative experiences in these areas predict lower sense of belonging (Berryhill & Bee, 2007; Bowman et al., 2019a; Cabrera et al., 1999; Hurtado & Carter, 1997; Hurtado & Ruiz Alvarado, 2015; Hurtado et al., 2007; James, 1998; Johnson et al., 2007; Locks et al., 2008; Maramba & Museus, 2013). Students of color who experience racial discrimination feel less attached and less belongingness to the institution (Hurtado et al., 1996). For students of color at PWIs, sense of belonging is less than for White students (Johnson et al., 2007), perceptions of race-related discrimination are related to reduced sense of belonging (Hurtado et al., 1999), and the strength of association between a hostile racial climate and reduced sense of belonging is exacerbated as well (Cabrera & Nora, 1994; Gusa, 2010; Hurtado & Ruiz Alvarado, 2015). However, both Hurtado et al. (2007) and Locks et al. (2008) found that positive interactions with diverse peers were associated with increased sense of belonging, and

Locks et al. (2008) observed that this relationship strengthened as interactions became more numerous. Maestas et al. (2007) and Strayhorn (2008) furnished additional evidence, finding that that students who socialized with peers of a different race/ethnicity felt greater sense of belonging to the institution. Where students feel that the climate is comfortable, respectful, and supportive their feelings of belonging are greater (Berryhill & Bee, 2007; Hurtado, 1997; Hurtado & Ruiz Alvarado, 2015; Johnson et al., 2007; Locks et al., 2008; Maramba & Museums, 2013; Soria et al., 2013-14) and their institutional commitment is positively impacted (Bowman et al., 2019a; Gloria et al., 2005; Johnson et al., 2014) including FG students (Roska et al., 2020).

Wellbeing. A review by Mayhew et al. (2016) concluded that hostile campus climates negatively impact student wellbeing. First-year college students appear to be particularly impacted by experiences of racism, which correlate positively with increased depression and anxiety (Jackson & Finney, 2002). The negative impacts of a hostile climate on wellbeing are especially consequential for students of marginalized identities and those attending predominantly White intuitions or institutions where White students constitute the largest racial/ethnic group (Bowman, 2006; Cokley et al., 2011; Contrada et al., 2001; Hurd et al., 2018; Smedley et al., 1993). Evidence indicates that for students of color, a negative climate including race-related tension, harassment, and discrimination are related to increased stress and psychological distress (Arbona & Jiménez, 2014; Buchanan et al., 2009; Byrd & McKinney, 2012; Griffin et al., 2012; Hwang & Goto, 2008; Neville et al., 2004). In their review of the prevalence and effects of minoritized student stress in college, Arbona et al. (2018) suggested that such stress could hamper students' intent to persist. Acknowledging these findings, this study examined stress as a psychological outcome, linking it back to campus experiences including perceptions of the racial climate.

Satisfaction. Evidence also exists that perceptions of the campus racial climate relate to students' satisfaction with college. Studying a nationally representative sample of first-time college students and controlling for a range of demographic and entry characteristics, Fischer (2007) found that a hostile racial climate correlated with reduced satisfaction. The trend held for all racial/ethnic groups studied—Asian, Black, Hispanic, and White. In their research based on a student experience survey, Trolian and Parker (2018) found evidence that satisfaction, as well as sense of belonging, were positively related to interactions with diverse peers and with perceptions of the diversity climate. Examining African American and White students' social experiences—including satisfaction with such experiences—Cabrera et al. (1999) found that a hostile racial climate was negatively related to social experiences only for African American students. Dissatisfaction associated with the campus racial climate has also been found to correlate with reduced commitment to the institution (Museus et al., 2008). These findings suggest that climate is associated with student satisfaction, and this relationship may be conditioned by student race/ethnicity. Thus, studies looking at satisfaction should account for climate, and should also acknowledge the diversity of the student population. The current study examined the relationships among climate-related experiences as they relate to psychological outcomes, attitudes, intent to persist, and actual persistence for a diverse group of FG students.

Persistence. Institutional climate and sense of belonging are both connected to the likelihood of retention and graduation. Hausmann et al. (2007, 2009) and Hoffman et al. (2002–2003) found that sense of institutional belonging was positively related to persistence. Hausmann et al. (2007, 2009) found this relation held for both African-American and White students, though generational status was not addressed in either study. Through the feelings of isolation and dissatisfaction that accompany an unwelcoming climate, students are more likely to consider

leaving college (Cabrera et al., 1999; Loo & Rolison, 1986). Similar results were reported by James (1998), who studied Black students at a PWI and found an inverse relationship between perceived social alienation and likelihood of attending the same institution if they could choose again. To study the question of climate and persistence at PWIs for Hispanic students, Gloria and Kurpius (1996) developed two instruments. One measured Chicano/a students' perceptions of their cultural fit with the institution; the other how they felt about the university environment. For each measure, students seeing the university more positively were more likely to decide to persist. Similarly, Gloria and Ho (2003)—studying Asian-American undergraduates—found that persistence intentions were positively related to perceptions of both cultural fit and the university climate. For the students of color in Fischer's (2007) study, an adverse racial climate increased the likelihood of leaving college while for White students, the effect was not significant. Massey and Probasco (2010) found that students experiencing discrimination and stereotyping by other-race students and faculty were less likely to graduate. In a study by Nora and Cabrera (1996), persistence was negatively and directly related to perceptions of an adverse racial climate while for minoritized students, persistence was only indirectly—but still negatively—related to racial climate.

As a whole, the evidence suggests that campus climate can impact persistence directly as well as indirectly (e.g., through college GPA (Nora & Cabrera, 1996)), with this relationship holding for various groups of students of color. Research focused on the direct and indirect effects of climate on persistence expressly for FG students is lacking, providing motivation for the current study which collected extensive information on students' climate-related experiences and linked them to persistence through psychological outcomes, attitudes, and intention.

Campus Interactions

In research on college student persistence, students' interactions with others and the environment while in college often figure prominently. Students experiencing a high level of interaction with faculty and peers are more likely to persist, while those experiencing fewer interactions have reduced persistence and attainment (Fischer, 2007; Mayhew et al., 2016; Pascarella & Terenzini, 1979, 1980, 1991, 2005; Polinsky, 2002; Skahill, 2002; Terenzini et al., 1981). Through interactions with faculty members and peers, students gain the experiences that impact their subsequent wellbeing and satisfaction (Rankin & Reason, 2005). And, through the race- and diversity-related aspects of those associations, students develop their perceptions of the campus climate (Rankin & Reason, 2005). Social and other peer interactions may encompass a variety of activities including studying and working on class-related assignments, dining, campus events, sharing close intellectual or personal conversations, and hanging out or going out socially (e.g., Brint et al., 2008; Solberg et al., 1993). In the present study, students' interactions were hypothesized to lead to psychological outcomes that directly or indirectly impact persistence.

The diversity among students sharing an interaction or activity is consequential for desirable college outcomes. Cross-racial interactions are positively related to students' intellectual and social self-concept (Chang, 1999), and their development of skills for functioning in a diverse society (Bowman, 2011; Hurtado, 2005; Hurtado et al., 2003). When racially and ethnically heterogeneous students interact, not only do they benefit by becoming more accepting and understanding of diverse others (Chang, 2001; Davies et al., 2011; Milem et al., 2005), but they may also feel a greater sense of belonging (Locks et al., 2008) and connection to the institution (Milem et al., 2005). They may also be more likely to persist (Chang, 1999, 2007).

Students' perceptions of their institutions' commitment to diversity also relate to their attitudes towards diversity, their appraisal of the campus climate, and satisfaction. Those having more-favorable perceptions of their institution's commitment to diversity are more likely to value diversity and show interest in learning about diverse groups (Harper & Yeung, 2013), perceive less racial tension among students, faculty, and staff (Hurtado, 1992), view the campus climate positively (Reid & Radhakrishnan, 2003), perceive the campus environment as supportive (Umbach & Kuh, 2006), and report greater satisfaction with the institution including institutional commitment (Umbach & Kuh, 2006). Participation in diversity coursework—specifically, taking two or more courses—or motivation to participate in diversity interactions is positively related to psychological wellbeing (Bowman, 2010a, 2010b, 2013).

It is important to note that the benefits of cross-racial interaction are contingent upon students having the opportunity to engage in such connections. Greater diversity within a school or college—while positively correlated with student diversity interactions (Chang et al., 2004; Pike & Kuh, 2006; Saenz, 2010)—is not necessarily sufficient to ensure that interactions occur at a level high enough for positive impacts to follow; opportunities to interact need be present and interaction may need to be encouraged for beneficial outcomes to follow (Gurin et al., 2002; Saenz et al., 2007b). Thus, for research exploring the impacts of cross-racial interactions, gaining a sense of students' opportunities for diversity interactions, as well as the extent of their actual connections, is important.

Through research, college students' perceptions that they feel respected also have been connected to how they perceive campus climate. Johnson et al. (2007) included items capturing students' perceptions of respect in their measure of campus racial climate. Soria et al. (2013-14) asked students to rate the degree to which they felt respected on campus in relation to SES and

class, race/ethnicity, and other sociodemographic factors. Student responses showed students from financially underprivileged backgrounds—more likely to be FG—felt less respected than wealthier students. Additionally, because feeling respected was correlated with feelings of belongingness on campus, less-wealthy students student felt less belongingness to the institution. Soria et al.'s findings are consistent with Strayhorn (2012, 2018), whose definition of sense of belonging includes student's perceptions that they feel respected on campus. Strayhorn (2012, 2018) also presents evidence that sense of belonging is related to how students experience the campus climate. More generally, Bui (2002) found that gaining respect through a college education was more important for FG students than CG students. These findings establish that for FG students, feeling respected is positively linked to feeling of belongingness, and may be connected to persistence.

Students' interactions in college are at the core of the Bean & Eaton (2000, 2001/2002) framework, including the modified version of the model employed in this study. In the model, academic and social interactions are hypothesized to impact subsequent psychological outcomes, which in turn impact institutional commitment. Beyond Johnson et al. (2014), empirical study of the relationships among these three constructs as specified by Bean & Eaton (2000, 2001/2002) have not been explored, as most studies examining student success employ psychological factors as final outcomes (Robbins et al., 2004) and thus, do not model psychological outcomes as potential mediators of the interaction-commitment relationship. Johnson et al. (2014) tested the Bean and Eaton (2002, 2001/2002) framework, finding positive correlations between experiences and psychological outcomes, and between psychological outcomes and institutional commitment—lending support to the hypothesis that psychological outcomes mediate the relationship between experiences and institutional commitment. The research looking at direct

connections between students' campus interactions—academic, and social—and institutional commitment has established that these two factors are positively correlated (Bowman et al., 2019b; Braxton et al., 1995; Credé & Niehorster, 2012; Davidson et al., 2015; Pan, 2010; Robbins et al., 2004; Strauss, 2004). While none of these studies focused on FG students, Davidson et al. (2015) recommended that additional research be conducted to explore students' academic and social experiences as determinants of institutional commitment specifically for FG students. The present study explored these connections. This study additionally considered psychological outcomes as not only as resulting from students' campus interactions, but also as predictors of students' commitment to the institution.

Contexts of Student Interaction: The Classroom and the Residence Hall

Beyond the day-to-day and informal interactions that are a part of the college experience are classroom interactions and—for residential institutions (the current study has this type of living arrangement)—residence hall and housing experiences. The classroom and the residence hall are both places where students come together for a significant portion of their time, and their interactions and experiences in these locations can shape their comfort within, attitudes towards, and satisfaction with the institution. Educational outcomes related to diversity are fostered when diverse students interact with one another in a classroom setting (Rankin & Reason, 2005). An engaged classroom, in which diversity is a theme through curriculum and pedagogy, also has positive impacts on student outcomes (Milem et al., 2005). Residence halls too are critically important spaces where students are exposed to a diversity of “knowledge, lifestyles, perspectives, and values” and can “test personal attitudes and identities [and] learn about cultural differences” (Simpson & Burnett, 2019, p. 288)—and have the opportunity to develop friendships with diverse others (Milem et al., 2005). Residence halls are also where students

have access to—and can benefit from—academic and social supports (Johnson et al., 2007).

Thus, classrooms and residence halls have an elevated role in the kinds of student experiences that relate to campus climate and feelings of connectedness.

Academic majors have also been conceived and studied as spaces of interactions between students, and between peers and faculty. While less physically situated than residence halls and in-person classrooms, student interactions associated with majors may include collaborative activities with other students in the major, discussions with faculty centered on advising, research opportunities, career plans, and mentoring, and contact with the corresponding academic department that administers the major (Brint et al., 2008; Lichtenstein et al., 2010). Most research on college majors focuses on specific majors such as STEM (e.g. Dika & D'Amico, 2016), or compares and contrasts majors with respect to some specific criterion—for example, extracurricular involvement (Lichtenstein et al., 2010). While virtually no research has specifically examined the connections between various majors and outcomes including student satisfaction and persistence, student engagement—including student-faculty interaction and collaborative learning—are associated with satisfaction and achievement (Lichtenstein et al., 2010). In general, to the extent the academic-major environment offers or makes available interactive learning opportunities, students can be expected to benefit.

Because classrooms and residence halls are typically (though not necessarily) heterogeneous and demographically varied, it is in these spaces that different groups of students are likely to participate or share in common activities and experiences. While these contexts may facilitate interactions among racially and ethnically different students and thereby foster greater acceptance, understanding, and community (Samura, 2018) they may also occasion episodes of stereotyping, misconceptions, and other discriminatory types of behavior (Hurtado et al., 1999;

Martin et al., 2017). Research has looked at student interactions and experiences in the classroom and residence hall—as well as the perceived climate of these spaces—and their significance for student wellbeing, satisfaction, and intent to persist. Some of this research has also looked at student generational status. These studies are now discussed.

Classroom Environment. On a residential campus where the primary instructional mode is face-to-face, a significant amount of college students' shared time together is devoted to instructionally-related activities. While students spend time studying alone, with others, or meeting with faculty outside of class, the classroom (i.e., lectures, recitations, and labs) is where students will spend much of their academically-related time engaging in instructional activities with faculty and peers. The classroom is where diverse individuals meet together through shared class schedules and mutual academic interests; Hurtado et al. (1999) identify the classroom and students' experiences therein as a significant component of the overall institutional climate. As campus experiences ultimately correlate with retention and graduation, an understanding of FG students' classroom interactions is an important element in understanding how such interactions relate to persistence through intervening variables including climate and experiences, psychological outcomes, feelings of connectedness to campus, and intent to persist. While relatively few studies look at these factors for FG students, it is important to bear mind that research on the classroom experience that looks at individuals' race/ethnicity or economic circumstance has relevance for FG students because they are overrepresented among students of color as well as those from economically disadvantaged backgrounds.

In several respects, what happens in teaching and learning spaces is significant in aspects beyond academics per se. The multidimensionality of students' course-related experiences was demonstrated by Solberg et al. (1993), whose empirical research found that academic skills and

efficacy, and interactions in class, are separate constructs. The interactions that students share with faculty and other students in a learning environment constitute cognitive and affective experiences that have been shown to relate to persistence and degree attainment, (Booker, 2007; Pascarella & Terenzini, 2005; Tinto, 1997). Research has looked at the various ways in which students experience the classroom and how they relate to others in it, and the implications of these interactions for student wellbeing and success. Though students may be apprehensive about approaching faculty members (Chung & Hsu, 2006), those who perceive instructors as approachable and interested in them feel supported, and develop positive attitudes towards learning (Rendón, 1994). FG students with greater course-related faculty interaction perceive greater ease of academic transition to college (Inkelas et al., 2007). When students perceive that professors care about them, the students' sense of belonging in the class is increased (Freeman et al., 2007; McMurray & Sorrells, 2009).

Perceptions of belongingness in class are also positively related to feelings of university belonging (Freeman et al., 2007). Relationships originating in the classroom have the potential to continue outside of class or after the course is finished, facilitating engagement and connection to others and to the institution (Pascarella et al., 2004; Tinto, 1997). When students perceive the classroom as organized and well-run, they feel a greater sense of belonging (Freeman et al., 2007), their satisfaction with the institution increases (Pascarella et al., 2011), and the impact on retention is positive (Pascarella et al., 2011). Persistence is also related to shared classroom activities; students who report more collaborative learning experiences and positive in-class interactions with peers are more likely to persist to the second year of college (Loes et al., 2017; Loes et al., 2018).

Studies specifically examining FG students' level of involvement in college academic and social activities find that it is lower than that of CG students (Dennis et al., 2005; Lohfink & Paulsen, 2005; Pascarella et al., 2004; Pike & Kuh, 2005). This patterns hold for the college classroom as well. FG students' participation in learning activities, and their involvement with peers, is lower than for students whose parents have more college education (Lundberg et al., 2007). A study by Kim and Sax (2009) found that FG students were less likely to interact frequently with faculty in the classroom. The study also found that irrespective of generational status, increased classroom interaction with faculty correlated with increased sense of belonging and overall satisfaction with campus. Thus, where FG students experience reduced classroom participation, they may feel less connected with campus. Because class participation correlates with subsequent outcomes—such as feelings of belongingness on campus—that are related to persistence, reduced class participation may threaten persistence.

Generational status also bears relationship to how students perceive and experience the college classroom; here, research has established a connection between the classroom environment, and students' sense of belongingness and wellbeing. For FG students, larger class sizes correlate with fewer interactions with faculty and teaching assistants (Beattie & Thiele, 2016). Also for FG students—including those from low-income backgrounds or identifying as students of color—the often competitive and individualistic culture of the academic environment is disadvantaging, especially when faculty explicitly or implicitly espouse such an atmosphere through their administration of the classroom and their actions (Rendón, 2002). The competitive culture of the typical college or university classroom can disparately and negatively impact FG students' motivation, engagement, participation, and grades (Canning et al., 2019; Jury et al., 2015; Sommet et al., 2015). Negative diversity experiences in the classroom have been shown to

impede the development of critical thinking skills, a pattern that may disparately affect FG students of color (Roska et al., 2017). For FG students and also for students of color, perceived competition among students in the classroom is also correlated with increased anxiety and stress (Posselt & Lipson, 2016). These findings suggest that FG students may be particularly impacted by a negative classroom environment. Information about the ways in which classroom experiences lead to stress for FG students—including FG students of color—and how such outcomes relate to their commitment to continued study and intent to persist is lacking in the literature.

The relationship of racial/ethnic identity to the classroom experience, and to attitudes towards the institution, has received research attention. However, few studies have jointly considered these experiences and attitudes. For minoritized students, the classroom can present race-related challenges. Across studies looking at racial disparity in the classroom, Black students are more likely to describe White faculty as exhibiting prejudice and discrimination (Sedlacek, 1999). Marcus et al. (2003) examined Black and White students' classroom experiences in terms of the behavior of other-race individuals towards them. Results showed that Black students were more likely to be verbally abused and ignored by other-race faculty, and feel ignored and shunned by other-race students. In another study, students of color rated their relationships with faculty and peers as weaker than White students' rating of their faculty relationships (Agnew et al., 2008). In a study of first- and third-year undergraduates, Helm et al. (1998) found that African-American and Asian students who perceived faculty as racist were dissatisfied with their school; this relationship was not significant for Hispanic or White students. While the aforementioned studies also make the point that a supportive classroom environment strengthens bonds among students and fosters students' academic success, the inequities and

disparate treatment experienced by students of color—many of whom are FG—may lead them to leave the institution or college in general.

For students of color, feelings of belongingness at the institution are related to classroom behavior and perceptions of the classroom climate. When instructors or fellow students behave in a discriminatory or prejudiced manner, attending class can become difficult and stressful, leading to reduced feelings of connection to the organization (Booker, 2007). A study by Cabrera and Nora (1994) found that students of color reported more prejudice and discrimination in the classroom relative to White students. This included being discouraged from participating in discussions, and being treated differently than others. For students of color, Cabrera and Nora also found that the relationship between perceptions of classroom discrimination and reduced feelings of belongingness were stronger for students of color than for White students. Because feelings of connectedness to the institution are related to greater persistence (Bean, 1985; Johnson et al., 2014; Lehmann, 2007; Sass et al., 2018; Tinto, 1993), students of color who perceive classroom discrimination may be particularly apt to drop out. Hurtado et al. (2011) examined students' perceptions of validating classroom experiences. For student of color, such validating experiences were related to greater feelings of empowerment. Hurtado et al. (2011), studying a mostly-FG sample, suggests that research on students' perceptions of their classroom experiences—which is an aspect of the current study—has the potential to yield information and understanding related to development of learning climates that foster success and educational attainment. This study explored the relationships between classroom experiences—including race-related discrimination—and perceptions of the institution, stress, and attitudes and intentions towards persistence, and elucidated how they relate to actual persistence for FG students.

Residence Hall Environment. Students' experiences in, and their perceptions of, the residence hall environment relate to a range of educationally significant outcomes. Living in campus residence halls enables students to "have more time and opportunity to get involved in all aspects of campus life" (Astin, 1984, p. 523). Living on campus, students are more likely to gain involvement with faculty (Astin, 1993; Pascarella et al., 1994) and with social and extracurricular pursuits (Astin, 1984; De Araujo & Murray, 2010; Pascarella et al., 1994), report satisfaction with college life (Astin, 1984; Gardner, 1991; Pascarella, 1985; Pascarella et al., 1994; Simpson & Burnett, 2019), feel a sense of belonging on campus (Astin, 1984), and persist (Astin, 1984; Gardner, 1991; Pascarella et al., 1994; Schudde, 2011; Simpson & Burnett, 2019). The increased interaction with faculty that comes with living on campus can also lead students to achieve greater academic performance and feel greater satisfaction (Astin, 1993; Kuh & Hu, 2001; Pascarella & Terenzini, 1991). For first-year FG students, living on campus is associated with greater sense of belonging and a reduced likelihood of perceiving the campus as discriminatory (Soria & Roberts, 2021).

It is not merely by living in a residence hall that students realize the benefits of doing so, but rather through the opportunities it presents for interaction and engagement, the supportiveness of its environment, and the experiences that accompany residence hall living (Astin, 1993; Mayhew et al., 2016; Pascarella & Terenzini, 2005; Simpson & Burnett, 2019). The character and substance of students' interactions can have implications for desirable learning-related outcomes. For example, students who discuss sociocultural issues such as different lifestyles and customs, and multiculturalism and diversity, with their residence hall peers are more likely to prefer learning through contemplation of ideas and concepts rather than through rote memorization of facts (Inkelas & Weisman, 2003). For students living in residence

halls, psychological wellness and feelings of belongingness to the institution are positively associated with their perceptions of social support and negatively related to perceptions of conflict or problems (Kaya, 2004; Sax et al., 2004). Similarly, Barthelemy and Fine (1995) found that social support positively impacted adjustment to college while conflict had a negative impact.

In residence halls, students are likely to undergo and share common experiences including stress related to academics, fitting in, time management, and other challenges of transition to campus academic and social life. The closeness of the community and the potential for supportive interactions and activities in residence halls may help to reduce student stress (Schudde, 2011). At the same time, it is the nature of those experiences—positive or negative, affirming or isolating—that play into students’ psychological outcomes and their attitudes towards continuing their studies at the institution. While students may have access to many opportunities for engagement and support in residence halls, they may also be subject to negative social or racial climates and associated feelings of exclusion and isolation (Armstrong & Hamilton, 2013) which may lead them to consider leaving college (Cabrera et al., 1999; Loo & Rolison, 1986). For students of underrepresented backgrounds—who, typically, are more likely to be FG—the campus climate can be especially impactful on subsequent feelings of belongingness to the institution and to persistence (Simpson & Burnett, 2019). Thus, the benefits gained through residence hall living are conditional upon respectful, comfortable, and supportive interactions and experiences for those living in this type of student housing.

There is limited research on residence hall living and associated experiences, perceptions of climate, and outcomes as they relate to FG students. Some studies have looked at a subset of these elements in relation to FG students, or have included generational status in their analyses as

a variable of interest or as a statistical control. A study of FG on-campus residential students participating in either a living-learning program or in traditional housing found that the ease of social transition to college was positively related to a socially supportive residence hall climate (Inkelas et al., 2007). Students' anticipation of their sense of belonging on campus, as well as participation in structured peer interactions such as study groups and planned social events were also positively related to ease of social transition. However, extent of diverse peer interactions did not relate to transition. It may be that a successful transition to college—as a measure of outcomes of diversity interactions—is limited, relating mainly to the transitional period and very early college experiences. Inkelas et al. called for additional research focused on FG students to study the impacts of both peer interactions and perceptions of peer support on long-term outcomes. This study looked at these topics.

Additional research has looked at student experiences and outcomes in relation to living arrangements and interactions. Pike et al., (2011) reviewed student engagement as a function of institutional characteristics, living arrangement, and class standing. Results showed that first-year and senior FG students reported relatively few diversity experiences as well as a lower frequency of student-faculty interactions. This indicates that FG students may be particularly challenged in accessing the types of interactions that lead to learning and academic outcomes, and satisfaction. Schudde (2016) ran a matched-comparison analysis of students living on or off campus, and compared their retention. While parental education level correlated with residency condition—students whose parents held a bachelor's degree or higher were more likely to live on campus—it did not predict retention. However, as family income rose, the gap in retention rate between off-campus and on-campus students—favoring the latter—increased. This result suggests that low-income students may not gain the same benefits of on-campus living as their

more well-off peers. Schudde proposes that low-income students may face challenges related to their expectations for on-campus living which may result in feeling of isolation, or their financial situation may limit their ability to participate socially with peers. Either of these factors may negatively impact persistence. Because many FG students are also of limited financial means, Schudde's (2016) findings may disproportionately apply to them. A study of FG residence hall students by Folger et al. (2004) found that small peer-group interactions were correlated with higher grades and greater persistence. Results also suggested that interactions positively impacted participation in social activities. Folger et al. emphasized the importance of ongoing research studying the connections between peer interactions and student outcomes.

The call of Folger et al. (2004) for additional research on students' interactions, and their impacts, remains relevant. At the conclusion of their study of the impacts of student living arrangement, Simpson and Burnett (2019) call for additional research to further flesh out the relationships between student engagement, academic success and social connectedness, belongingness to campus, and persistence. They also acknowledge the importance of studying these factors for underrepresented populations. In this vein, the present study assessed FG students' residence hall experiences and explored their connection to psychological outcomes, institutional commitment, intent to return and actual persistence to ascertain how these factors interrelate—and how the findings inform ways that FG students can be better supported to facilitate success and graduation.

College and Stress (Psychological Outcome)

The responsibilities and pressures of being a college student can be stressful (Center for Collegiate Mental Health, 2020; Dusselier et al., 2005; Eagan et al., 2016; Hicks & Heastie, 2008; Leppink et al., 2016). Stress has been shown to be particularly pronounced during

students' first year (Dyson & Renk, 2006; Hicks & Heastie, 2008; Ross et al., 1999). While under certain conditions stress may facilitate student performance (Stallman & Hurst, 2016), it can also present significant challenges that put students' wellbeing at risk and hinder their persistence.

Various studies have empirically demonstrated that stress is multidimensional in terms of its sources (e.g. Locke et al., 2011; Stallman & Hurst, 2016). Going to college is often viewed as an investment by parents and students, accompanied by high expectations for academic success that can lead to stress (Darling et al., 2007; Shields, 2002). Faculty and curricular demands may be significantly greater than in high school, and the penalty for underperformance may be dismissal from the institution. Such academically-related pressures can impair mental health and lead to stress (Center for Collegiate Mental Health, 2020; Eagan et al., 2016; Ross et al., 1999). As determined by students' responses to the Counseling Center Assessment of Psychological Symptoms-62 (CCAPS-62) survey (Locke et al., 2011), challenges may exist with securing funds to pay for tuition and fees, room and board (at residential institutions and for non-commuters), and other expenses such as clothing, travel, and recreation. A recent report on college student mental health found that 70 percent of students found their financial situation to be sometimes, often, or always stressful (Center for Collegiate Mental Health, 2020), while another study found that lack of money was second only to academics as a source of stress (Darling et al., 2007). Taking out loans and accruing debt, or working—which may interfere with students' ability to meet academic demands—represent two non-ideal but often necessary means of meeting college costs (Burrus et al., 2013; Joo et al., 2008/2009; Ross et al., 1999). For students and families taking out loans, high levels of debt are associated with increased stress (Britt et al., 2016). Maintaining social, personal, and familial relationships back home, while

building new academic and social ties on campus, can prove stressful (Burrus et al., 2013; Center for Collegiate Mental Health, 2020; Eagan et al., 2016; Ross et al., 1999). Personal relationships, or health- or diet- or sleep-related problems, also constitute sources of stress for college students (Burrus et al., 2013; Darling et al., 2007; Gerdes & Mallinckrodt, 1994; Hurst et al., 2013; Ross et al., 1999; Villanova & Bownas, 1984). Challenges with time management—including perceived control of time—are correlated with increased tension (Macan et al., 1990; Nonis et al., 1998). Participation in collegiate athletics can also heighten stress (Nattiv & Puffer, 1991; Pinkerton et al., 1989). As noted by Darling et al. (2007), the newfound independence and freedom one finds in college must be met with accountability, problem-solving, and self-management—a set of responsibilities that may cause tension and anxiety.

Large-scale surveys of the U.S. college population from the National College Health Assessment (NCHA) of the American College Health Association (ACHA) provide information on student anxiety and stress, revealing the growing extent to which college students are experiencing stress. In 2018, 58% of responding students reported high stress levels (ACHA, 2018), up from 52% of respondents five years earlier (ACHA, 2013). Sources of distress included academics (50% of respondents), finances (36%), family problems (31%), intimate and social relationships (31% and 29% respectively), and health and sleep concerns (25% and 33% respectively). Each of these sources was more prevalent in 2018 than in 2013 (ACHA, 2013; 2018). Results from the 2016 administration of the Higher Education Research Institute (HERI) Freshman Survey indicated that nationally, over one-third of first-time freshmen frequently felt anxious (Eagan et al., 2016). The HERI report acknowledged moving to campus, academic pressures, and establishing social relationships as inducing stress. From these findings it is clear

that attending college is often accompanied by a variety of stressors impacting a significant number of students.

Stress and Persistence

With stress being a prevalent aspect of the college experience, the question of its impact on academic progress takes on significance importance. Accordingly, the relationship of stress to persistence has received considerable attention in the literature. Wilbur and Roscigno (2016) studied baccalaureate completion for a national sample of enrollees at four-year institutions. Students experiencing greater stressful events in college were less likely to graduate. Stressful events in college have been shown to negatively impact persistence—in each of students' first four years (Thomas et al., 2021). In a study of several correlates of persistence including ACT score and college GPA, stress was found to be the strongest predictor of retention (Saunders-Scott et al., 2018). In a sample of students of color, general stress was inversely related to persistence attitudes (Wei et al., 2011). Johnson et al. (2014) separately examined White students and students of color. Greater stress led to reduced institutional commitment—social stress for White students, and academic stress for students of color. Zhang and RiCharde (1998) concluded that stress played a role in the attrition of students who experienced difficulty with managing the demands of college. Arbona et al. (2018), employing a path model in an analysis of female Hispanic students, found that a composite measure of stress both directly and indirectly (through depression) predicted lower persistence intentions. Amirkhan and Kofman (2018), finding no direct relationship between stress and dropout, posited an indirect relationship between these factors mediated by course grades. Pritchard and Wilson (2003) found that stress and intent to drop out were not significantly correlated, while effectively managing stress was related to intent to persist.

Financial stress has been linked to greater attrition as well; students reporting greater financial stress are more likely to discontinue college (Britt et al., 2017). Joo et al. (2008/2009) found that students who had reduced their course loads or dropped out for a semester reported greater financial stress than students who had not taken these actions. Analyzing predictors of dropout for financially strained students, Joo et al. (2008/2009) also found a positive relationship between level of financial stress and dropout.

Stress and FG Students

For FG students, becoming a successful college student involves learning to navigate campus and cope with its academic and social demands. Anxiety often accompanies these challenges (Davis, 2010; Gist-Mackey et al., 2018). While all college students are subject to stress, the overall intensity of stress is often greater for FG students (Stebbleton et al., 2014). Specifically, in research studies, FG students report more stress related to finances (Castellanos & Jones, 2003; Mehta et al., 2011), traumatic life events (Jenkins et al., 2013), and family-related demands and issues (Covarrubias et al., 2019; Wilbur & Roscigno, 2016). Gibbons et al. (2019) studied the college adjustment of FG students, and found that self-care, sleep, finances, family issues, and lack of information all constituted sources of stress. FG students' stress also relates to sociodemographic factors such as race/ethnicity and family financial situation that—on average—may cause them to experience greater stress (Jay & D'Augelli, 1991). However, when FG students are stressed, they are less likely to share their feelings and enlist the support of others (Barry et al., 2009).

Role of College Student. Students and families coming from sociodemographic backgrounds that are historically less likely to attend college (such as those having less college education and experience) may experience heightened stress in attempting to cope with college's

additional demands on their time and monetary resources (Mowbray et al., 2006). FG students are more likely to incur certain kinds of psychologically-related experiences in college—such as ongoing demands from family for support, or race-related discrimination—that can lead to stress (Swanbrow Becker et al., 2017). Unfamiliarity with college, and discomfort and struggle with assuming the identity and role of college student, can lead to stress (Lowery-Hart & Pacheco, 2011; Ward et al., 2012). Oftentimes, the families of FG students are unaware of the amount of effort and energy that college students must contribute to their studies in order to succeed. As a result, FG students are often left to navigate the intricacies and demands of campus academic and social life on their own with relatively little helpful support, which can prove stressful (Lowery-Hart & Pacheco, 2011; McCoy, 2014; York-Anderson & Bowman, 1991).

Staying Connected to Home. For FG students, staying connected with home communities and providing assistance with challenges that their families encounter at home—while simultaneously becoming involved in and keeping up with campus academic and social activities—can be particularly strenuous (Covarrubias et al., 2015, 2019; Gibbons et al., 2019; Longwell-Grice et al., 2016; Vasquez-Salgado et al., 2015). Ongoing family expectations for support from FG students may lead to considerable stress, as time and energy spent serving family needs competes with the attention and focus required to be a successful college student. Assisting with family-related demands and responding to calls for help from home, while dealing with the academic and other pressures of college, leads to significant emotional tension and stress (Covarrubias et al., 2019; Jehangir, 2010b; Mehta et al., 2011; Pedrelli et al., 2015; Vasquez-Salgado et al., 2015). Consistent with their family involvement, national data indicate that FG students are more likely to suffer stressful family or life events (Wilbur & Roscigno, 2016). In serving family expectations for involvement in home affairs, while making efforts to be

successful at college, FG students may be especially likely to experience significant stress. These stressors may impact their willingness or ability to continue their studies in college. This study disentangled various sources of stress as reported by FG students, and assessed the connections of stressors and stress to persistence attitudes and intentions—and actual persistence. Results point to supports that acknowledge, and have the potential to address or ameliorate, stressors for FG students so that they are best able to direct their energies towards their development and success in college.

COVID-19

In March of 2020, the deepening spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)—the virus causing coronavirus disease (COVID-19)—led the World Health Organization to declare a global pandemic. Sooner after, many postsecondary institutions—including the site of the present study—adopted measures geared towards the safety of students, faculty, and staff including an abrupt shift to remote learning and a requirement that students living on campus relocate to home or to an off-campus living arrangement. In 2021, COVID-19 continues to disrupt colleges and universities and the students they serve. For FG students—who on average were less likely to persist than other students before the pandemic (Cataldi et al., 2018; Ishitani, 2016; Lohfink & Paulsen, 2005; Orme, 2021; Radunzel, 2018)—surfacing the challenges created or exacerbated by COVID-19 and the move to remote education, and finding ways to address them, is critical.

Impacts

The impacts of COVID-19 disrupted the lives of students in many ways. Illnesses of family and friends at home may have shifted students' attention away from their studies. Time zone differences meant that classes might be scheduled during work or sleep hours, potentially

creating scheduling conflicts as well as disturbing the sleep patterns of students and their family members. Adapting to remote learning—including acquisition and mastery of technology, and navigation of learning management systems—was stressful and also demotivating for students (Shapiro et al., 2020; Soria & Horgos, 2021). Survey data collected from mostly FG students at one institution found that only seven percent of respondents reported no challenges with the transition to remote learning (Shapiro et al., 2020). The same study found that attending to family matters was a frequent source of stress, while another study found that academic and financial stressors associated with COVID-19 put students' mental health at risk (Soria et al., 2020). A survey of college presidents early in the pandemic indicated that 90% were concerned about students' mental health (Lederman, 2020). Closure of countries' borders created additional impediments and uncertainty for international students including inability to secure flights and documentation required for travel. With campuses closed and an abeyance of an in-person college experience, students and their families questioned continuing to pay pre-pandemic costs of attendance (Dua et al., 2020). For those on campus or as a condition of returning to campus, safety protocols including regular testing and later, vaccine attestation and proof of vaccination were additional conditions for participating in class and campus life.

FG Students. The hardships brought on by COVID-19 had disparate impacts across the sociodemographic spectrum. During the pandemic, students and families from less advantaged backgrounds suffered greater declines in economic and health measures than others (Aucejo et al., 2020). Evidence points to COVID-19's greater disruptiveness for FG students. Because residential college campuses function as an equalizer for students of varying backgrounds and privilege (Casey, 2020)—all students attend classes together, and at residential institutions dine, live, and access recreation and support in common areas—the forced return home and shift to

remote learning during the pandemic particularly deprived FG students of campus supports and provisions, and laid bare the effects of inequalities in their home lives (McCarthy, 2020; Orme, 2021; Soria & Roberts, 2021). Technology barriers including lack of computers and internet, and cost outlays for acquiring remote technology, were more common for FG students (McCarthy, 2020; Soria et al., 2020). For some FG students returning home, family-related responsibilities including work or childcare interfered with remote—especially synchronous—learning (Orme, 2021; Shapiro et al., 2020; Soria & Roberts, 2021). Because the home environments of FG students are less likely to be safe compared to those of other students, the return home may have exposed some FG students to physical or emotional abuse (Soria et al., 2020). Remote classes, coupled with the distractions of home, also limited students' opportunities to establish close connections with faculty. Online breakout rooms held during remote classes—often not moderated by instructors—could be unengaging or negative experiences (Orme, 2021). FG students' academic progress also suffered during the pandemic. While for all students COVID-19 was associated with a greater rate of course withdrawal, lower GPA, and greater time-to-graduation, the impact on FG students on these measures was disproportionately negative (Aucejo et al., 2020). During this time, occurrence of mental health difficulties also increased more for FG students than for others (Soria et al., 2020).

Despite the challenges of the pandemic, adjustment and adaptation by faculty, staff and students served to mitigate the disruption. Emotionally supportive faculty helped FG students navigate their home circumstances and adjust to attending college remotely (Orme, 2021). For some FG students, making contact with faculty for support through email or chat was a quicker, easier, or less threatening approach than doing so in person, and led students to reach out for support where they might not have otherwise done so. Comfortable interactions and relationships

with faculty ensued (Orme, 2021). Similarly, online student activities and groups became more visible through social media, and accessible through clicking a few buttons on the computer. This enabled FG students to connect with peers holding similar interests and make new social connections (Orme, 2021). While the pandemic upended much of college life, the disruption opened or demonstrated new ways in which students might learn and connect with others. Ongoing study of the pandemic's effects have the potential to inform how higher education institutions can craft learning and living environments to the benefit of FG students under non-pandemic as well as pandemic conditions.

Chapter Three: Methodology

The Methodology chapter is a detailing of the procedures utilized to explore the study's research questions. This chapter describes the individuals in the study and the information that they are contributing to the research effort. This study used a path analytic design to assess the level of agreement between a proposed theoretical model of student retention, and observed empirical results. An exploratory factor analysis was performed to identify underlying constructs from the data, and factor scores derived from the factor analysis were used in the path model. Research questions are presented at the end of the chapter.

Research Design

The purpose and procedures of a study are described by its research design. There exist many varieties of research designs. For a given study, the use of a specific design governs the methods (e.g., qualitative, quantitative, mixed), types of claims supported (e.g., descriptive, relational, causal), and research products yielded (e.g., decision support, theory development, case study) by the study (Creswell, 2002; Krathwohl, 1998; Light et al., 1990). Because research designs control what can be accomplished through a study, they also determine the study's limitations.

The present study utilized a correlational design. Because the Bean and Eaton (2000) model specifies relationships among college students' attributes and psychological dimensions, and the association of these to actual persistence outcomes, a correlational design is merited for studies exploring the Bean and Eaton model. A correlational design enables analysis of the strength and pattern of relationships among a set of variables, as well as how the set of variables relates to an outcome (Creswell, 2002). Thus, the information resulting from a correlational study provides the researcher with insights about the interrelationships among variables. A

correlational design can accommodate a longitudinal structure among measurements and constructs, as is the case with the Bean and Eaton model. This is accomplished through implementation of a path or structural equation model (Creswell, 2002). For the present study, a path model was the correlational model of choice.

This study combined elements of cross-sectional and longitudinal designs. For a given population of interest, a cross-sectional data collection yields information at just one point in time whereas a longitudinal design obtains data at two or more time points (Krathwohl, 1998). The present study employed a cross-sectional survey design along with a longitudinal, student-records-based design. Students' experiences, attitudes, and intentions were measured once (i.e., at the spring of their first year) utilizing the SUSES questionnaire, which was administered to all degree-seeking undergraduates to collect data on their academic, living environment, and social campus interactions and experiences as well as their experiences with stress. Meanwhile, data on students' academic performance (i.e., GPA and credits earned) and persistence were available semester by semester for the entire span of their undergraduate studies (i.e., from matriculation in fall 2009, through six year later). Within the context of survey research, cross-sectional designs are useful for assessing current attitudes and beliefs as well as comparing two more populations (Creswell, 2002); however, they do not offer the same level of sensitivity to change over time as longitudinal designs (Krathwohl, 1998). The intent of the SUSES was to give voice to students concerning their race-related and other experiences, and thus provide university leadership with timely data that could inform efforts to enhance the student experience (Johnson et al., 2010). A cross-sectional design met that need, though the lack of follow-up data collection precluded an assessment of change in students' experiences, attitudes, and intentions over time. On the other hand, longitudinal analysis of student persistence behavior over time was enabled

by the availability of student records data—a more reliable source of actual behavior, relative to a survey-only design.

Participants

The population of study was the cohort of first-time (i.e., non-transfer), full-time, fall 2009 baccalaureate-seeking first-generation matriculants at a large, private, selective, residential research university in the northeast. All participants were enrolled in courses at the time of data collection in spring 2010. The decision to study first-time, first-year students was made by identifying the advantages that this group offered in relation to the topic of study. By definition, first-time students have not previously enrolled in a postsecondary program. For them, college is a new experience. The focus on first-year students is because the attrition rate is highest after the first year, and because the first year cohort is available for study in virtually its entirety. The first-year cohort—unlike earlier-entering cohorts—had not seen substantial attrition as of the time of the survey. Thus, it was inclusive of students who subsequently left the institution. Collecting survey responses from these students before they leave is critical to the purpose of the study.

From the resulting survey population of 12,856 students, 3,781 surveys were gathered. From admissions records, 550 of the 12,856 students surveyed were identified as domestic, first-time, first-year FG students (i.e., the study population). Of these, 326 yielded usable survey responses, for a nominal response rate of 59%. However, the SUSES instrument collected detailed information on respondents' parental/guardian educational attainment. Because of its recency and granularity, SUSES information superseded admissions data for determining which students were first-generation. Using SUSES parental/guardian educational attainment responses, 180 respondents were newly identified as FG while 39 were determined to be non-FG for a net

increase of 141 FG students to the study. Of the resulting 467 students, two were commuters and did not live in university housing; they were removed from the study. Also omitted from the study were those responding “Prefer not to respond” to the racial/ethnic identity or gender questions. Additionally, racial/ethnic identity or gender groups with sole membership (i.e., Transgender;), or where no information was available, were omitted. As a result, the final sample size was 459 FG students. Table 3.1 shows the distributions for gender and race/ethnicity for the FG population, survey respondents, and final sample respectively.

Table 3.1
Population, Respondents, and Sample

Variable	First-year FG population		Respondents		Final Sample	
	N	%	N	%	N	%
<i>Gender</i>						
Female	305	55.4	194	59.5	292	63.6
Male	245	45.6	132	40.5	167	36.4
<i>Race/ethnicity</i>						
American Indian	2	0.4	1	0.3	3	0.7
Arab/Arab American					3	0.7
Asian American/Asian	135	24.6	97	29.8	105	22.9
Black/African American	83	15.1	44	13.5	55	12.0
Hawaiian/Pacific Islander	3	0.6	2	0.6	2	0.4
Hispanic/Latino	104	18.9	62	19.0	58	12.6
Multiracial	8	1.5	5	1.5	44	10.0
Unknown	48	8.7	20	6.1		
White	167	30.4	95	29.1	189	40.7

Female students comprised 55% (n=305) of the FG population, a proportion that grew to 64% (n=292) of the final sample. While 61% (n=335) of the FG population were other than White or unknown, only 58% (n=267) of the final sample identified as Students of Color. The final sample included students identified as FG through their survey responses, who had not been originally identified as FG through admissions records. Students identified as FG through the survey were more likely female, and more likely to identify as White or be unknown.

Sampling

Rather than choosing a statistical sample of the study population, a census of students was selected. With the survey initially planned as exclusively online, technology and software costs were not contingent upon sample size and thus were not a limiting consideration. By surveying everyone in the population, nobody was excluded from participating. This meant that no students would suffer the situation in which their peers had been asked to participate in the survey, but they had not been invited. Concerns about the representativeness of the sample (random or otherwise) were obviated through use of a census. A census also increased the statistical feasibility of comparing the responses of small groups of the study population, such as students of a specific racial/ethnic identity or students enrolled in a low-enrollment school/college. Similarly, a census maximized statistical power for testing hypotheses and detecting true effects. The census approach obviated the question of appropriate sample size for analysis and for obtaining meaningful conclusions, as all possible participants were sampled (power analysis for the obtained sample is addressed in the *Statistical Analysis* section). With online data collection there was no need for data entry; data cleaning and analysis could proceed as soon as the survey was closed.

The individual student constituted the sampling unit as well as the unit of analysis. Participants were located through their records on the PeopleSoft (PS) enterprise computing system. The survey sample was identified through a query of student records, employing filters on system variables to pull enrolled, degree-seeking students. The query allowed for identification of undergraduates, semester of matriculation, and first-time versus transfer-in admissions status.

Instruments and Measures

Data Sources

The data for this study originated from two sources. One source was a survey administered both online and as paper; the other was institutional records. The SUSES study was commissioned by institutional leadership with the purpose of collecting information on the campus experiences of students of color (Johnson et al., 2010, 2014). In the years leading up to the survey, the proportion of students of color on campus had been increasing. However, compared to White students, their retention and graduation rates remained discrepant (U.S. Department of Education, National Center for Education Statistics, 2004, 2005, 2009, 2010). The incongruity merited institutional attention, and warranted a need for information on the subject. An administrative decision to conduct a survey of all undergraduates would give voice to student concerns, provide for group and comparative analyses, and provide information on how to enhance the student experience (Johnson et al., 2010, 2014). Collaborating in the research effort was a faculty member studying the experiences of women and students of color in science, technology, engineering and mathematics (STEM) programs of study.

Secondary analysis of data can prove problematic, including difficulties with access (including time to gain access), data quality, and documentation (Kiecolt, & Nathan, 1985). However, use of the SUSES data is not characterized by these limitations. All SUSES data remain intact; no degradation has occurred over time. Outside of IRB approval, there exist no impediments with accessing the data. A copy of the SUSES instrument is available, and the data were readily available for use in the present study.

Rationale for Instrumentation. A central thesis of this study is that Bean and Eaton's (2000, 2001/2002) psychological model of college student retention is a useful framework for

considering factors related to FG student persistence. To test the efficacy of the model, data relating to environmental interactions, psychological outcomes, institutional commitment, and intent to return are needed. The SUSES is an archival source of data and was not developed for the Bean and Eaton model. However, it is focused on the campus climate and includes items that ask students to share their perceptions and feelings relating to their academic, living environment, and social interactions as well as the levels of stress they feel across several categories. The survey also has items suitable for gauging institutional commitment and intent to return. Several of its questions capture student entry characteristics including preparedness and parental educational level. The data from the SUSES was similarly utilized in Johnson et al. (2014) to investigate these constructs for students of color and White students. For example, students were asked for the extent of their class participation as well as their interactions with instructors, how often they spend free time and go out socially with other students, how much stress they experience with paying for college and with family obligations, how connected they feel on campus, and the importance of graduating from SU. Student responses to these and related items on the SUSES were used to gauge the constructs of the Bean and Eaton model relevant to the study, and how the relationships among the constructs aligned for FG students.

Use of SUSES data for the present study is further warranted because much of the content of the survey relates to specific challenges known to confront FG students. Factors disproportionately affecting FG students include preparedness for the academic rigors of college (Balemian & Feng, 2013; Berkner, & Choy, 2008; Chen & Carroll, 2005; Choy, 2001; Cushman, 2007; Jenkins et al., 2009; Pascarella et al., 2004; Warburton et al., 2001), meeting the social demands of campus life (Cushman, 2007; Jehangir, 2010a), the level of comfort with class participation and with engaging faculty for support (Engle & Tinto, 2008; Jenkins et al., 2009;

Kim & Sax, 2009; Pascarella et al., 2004), participation in extracurricular activities and engaging with peers both in and out of the classroom (Cushman, 2007; Engle & Tinto, 2008; Pascarella et al., 2004), and financial resources including the demands of paying for college (Bui, 2002; Chen & Carroll, 2005; Choy, 2001; Engle et al., 2006; Jenkins et al., 2009; Redford & Hoyer, 2017; Terenzini et al., 1996; Warburton et al., 2001). The SUSES collected information in each of these areas, and data from FG students have the potential to show that the mechanisms and processes of retention are unique for FG students.

Institutional Data. Institutional data were sourced from the PeopleSoft (PS) enterprise resource planning system. Data relevant to the study were obtained either through direct querying of PS data tables, or via querying the institution's Data Warehouse (DW) which is populated with PS data. The DW combines myriad, discrete PS data tables into a smaller number of unified data views. Because the DW data views have the advantages of integration and relative simplicity of use, they were the primary source of institutional data for this study. The enterprise data areas relevant to this study include Campus Community (i.e., demographics), Admissions (e.g., college application; ACT and SAT; high school GPA), Student Records (e.g., semester enrollment status, credits taken and earned, GPAs; degree completions), and Financial Aid (e.g., financial aid applications; family income, financial need, Pell Grant eligibility).

Measures

To gather students' perceptions about issues they face on campus including race-related aspects of campus climate, the SUSES questionnaire was developed. The SUSES instrument was designed to satisfy the data needs of the project's administrative and faculty constituency. The survey would need to be comprehensive in content, but not so long in length as to cause students to quit it before completion. The language of the questions also needed to be sufficiently clear to

undergraduates. Though the survey was not developed to capture the experiential, psychological, and intentional constructs of the Bean and Eaton (2000) framework, the content of much of the survey is consistent with and applicable to the framework.

The project's leaders identified a team of individuals holding relevant content knowledge or related expertise who were able to contribute to survey design. The team identified areas of interest that the survey might cover (e.g., climate perceptions; residence hall experiences; faculty interactions). A campus survey of undergraduates distributed years earlier on campus—the Student Perceptions of Student Life (SPSL) questionnaire—provided ready examples of items. Established national surveys assessing college student's perceptions, attitudes and behaviors related to their development and success such as the National Survey of Student Engagement (NSSE; Kuh, 2001) and the College Senior Survey (<https://heri.ucla.edu/college-senior-survey/>) provided additional perspective on survey content. Theoretical and empirical grounding of potential survey items was informed through a research literature review that was focused on the challenges to educational success faced by students of color in higher education institutions. With these materials and information, team members drafted a set of candidate survey items and response scales that tapped constructs of interest. After many iterations of survey development including which of the proposed items to include, edit, or exclude, a pilot survey was drafted and shared with various offices on campus to establish content validity.

To gather feedback from the population of interest, the pilot survey was administered to a group of students having female and male, and student of color and White, representation (Johnson et al., 2014). The survey development process took approximately six months. In its final version (see Appendix 1 for the paper version of the survey; including cover letter and consent form), the SUSES asked for students' perceptions about their: classroom experiences;

experiences in their major(s); peer interactions (with same race/ethnicity, as well as different race/ethnicity, students); residence hall experiences; feelings concerning their living environment, the campus environment, and institutional commitment to diversity; level of stress for each of a number of stressors; and commitment to the institution and to obtaining a degree. The survey asked students to share their racial/ethnic identification(s) including nationality, and invited students to share their gender and sexual orientation. It also asked for level of parental education (seven levels, from “Did not finish high school” to “Completed a doctoral degree”), separately for each parent or guardian. Finally, the survey asked if English was the primary language at home. In total, the survey contained 162 forced-choice and open-ended items. Based on pilot work, it was expected that the survey would take each student approximately 15 minutes to complete. The first page of the survey advised students how to access the survey, what credentials to use for a login and password, and outlined the survey’s layout. The consent form was the second page of the survey. It advised students that participation was voluntary and that they had the option to withdraw from the survey at any time without penalty. To provide students a means to have their questions or concerns answered, it provided the primary investigator’s contact information. The survey protocol received Institutional Review Board (IRB) approval in February of 2010.

Procedures

The survey was an institutional research effort backed by University administration. It was encoded into an online, web-accessible form by University staff.

Data Collection

All enrolled, baccalaureate degree-seeking undergraduates who were at least 18 years of age in spring of 2010 were identified via accession of records on the enterprise computing

system. Each survey was associated with a student via the institutional student identification number, enabling a connection of survey responses to data on system. All students selected for the survey were sent an email from the Associate Provost for Academic Programs and the Director of the Office of Multicultural Affairs inviting them to complete the survey. A unique passcode for accessing the survey was included in the email. Students not responding to the initial invitation were sent up to three reminder emails (see appendixes 2, 3, and 4). Student participation in the survey was voluntary; no academic “extra credit” was available for participation. During the period that the survey was open, various student-serving offices on campus (e.g., Multicultural Affairs; International Services; Academic Opportunity Programs; Graduate Preparation and Achievement) utilized their listservs to encourage and remind students to participate in the survey. Additional efforts to market the survey and maximize the number of participants included posters placed in the residence halls, and table tents located in the main campus library, campus dining halls, and campus computer clusters (Johnson et al., 2014).

The survey initially was available to students only online. However, the observed low response rate (less than 20%) was problematic, necessitating a remedy in order to increase the number of respondents. The solution was to administer a paper version of SUSES directly to students in the institution’s residence halls, thereby increasing the response rate of first- and second-year students who constituted the residence hall population. Third-year and higher students lived primarily off campus; they were not mailed a paper SUSES. This was due to unreliability of off-campus addresses, and because feedback on first- and second-year students’ experiences were deemed most critical given the purposes of the study. The paper SUSES included a unique code for each student, maintaining the linkage of online and paper survey responses to institutional records. SUSES administrative staff coordinated with residence hall

directors to administer a paper SESES to students who had not completed the online version (Johnson et al., 2014). Data entry for SUSES responses was accomplished in collaboration with an outside data management agency, and paper responses were coded similarly to online responses. The paper survey dataset was subsequently appended to the online dataset. This record in turn was merged to institutional data, creating a master data file. As a result of paper SUSES administration, the number of survey responses increased substantially and ultimately reached 3,781 completions.

Confidentiality and Privacy

To protect the confidentiality of the data and the privacy interest of SUSES participants, several precautions were followed. IRB approval was obtained from the institution's Office of Research Integrity and Protections. The author of the current study was a member of the original SUSES team; he is familiar with, and continued to observe, the study's research protections. One of these is that no individual survey responses will be disclosed in any report, research artifact, or publication from the study. Another safeguard is that the electronic study data were stored on secure, password-protected servers while completed paper surveys were kept in secure office spaces. In the original SUSES study, individual response data were only available to the research team. As the author of the current study was on the SUSES team, this protection remained in place. The maintenance of privacy for SUSES respondents was respected by allowing students to control how and under what conditions they accessed and responded to the survey.

Data Preparation

Accessing, Cleaning, and Configuring the Data

Preceding the application of statistical procedures is the process of readying the raw survey and systems data so that it is ready and complete for analysis. Steps to be taken prior to

application of statistical methods include determination of format for survey data storage, development of codes to translate survey responses into values that can be read by statistical software, data entry, and data cleaning to remove or minimize any irregularities that could adversely affect data analysis or interpretation of results. Formal documentation of how the data were coded and stored serves as a resource and reference for those making use of the data for research purposes (Fowler, 2009). For the SUSES data, these processes have been completed. For example, responses to SUSES survey items having a “Choose all that apply” response format were coded as zero or one for each possible response. Across respondents, this allowed for calculation of the proportion choosing a particular response. Responses to Likert-type and ordered-response items were stored in the dataset using the number appearing on the SUSES questionnaire. Open-ended responses were stored in the survey dataset as text fields.

Admissions, financial aid, and student records data sourced from the enterprise computing system undergo integrity checks and audits and, as a result of these processes, data inaccuracies are rare. Where systems variables or their values came into question during extraction and analysis, the author was able to contact the relevant data custodian—responsible for systems information—for assistance.

Data Entry

As SUSES responses were collected through both online and paper questionnaires, steps were taken to ensure that the final, combined dataset had a uniform layout. Responses to the electronic version were programmed to directly populate a database, set up such that only codebook values for survey items appeared in the database. The data entry for paper surveys was outsourced to a local data-entry company. There, programmers set up a template that provided for ease and simplicity of data entry for their staff (to minimize data entry errors), while also

rendering a data layout that could readily be made consistent with the codebook. As an additional check on data entry accuracy, paper survey responses were double-entered (i.e., entered twice) and compared; discrepancies were checked against the corresponding paper survey source, and corrected.

Analysis Variables

The Bean and Eaton (2000) model provided a post-hoc framework for identifying and generating the variables to be used in this study. In order of hypothesized sequence, the model stipulates measurements of entry characteristics, followed by the institutional environment (including interactions, and psychological process and outcomes), followed by intermediate outcomes (i.e., academic and social integration), followed by attitudes (i.e., institutional fit and commitment), then intention to persist, and finally, behavior (i.e., persistence). The SUSES responses, as well as institutional data, were utilized to operationalize these constructs and measures, enabling a test of the Bean and Eaton (2000) framework.

Dependent Variables

Student persistence outcomes comprised the dependent variables for the study. Two-year retention, as well as graduation after four and six years, were derived from student records. Thus, all participants in the study had nonmissing outcome measures capturing their actual behavior. As the students in the study matriculated in the fall 2009 semester, two-year retention was enrollment (full or part time) at the fall 2011 semester. Graduation within 4 and 6 years was defined as completing a baccalaureate degree by August 31, 2013 and 2015 respectively. Students meeting the definition for a dependent variable were coded “1” for the variable; otherwise they were coded “0.”

Independent Variables

The independent variables included college entry characteristics as well as the psychological factors of the Bean and Eaton (2000) model. Academic performance—an intermediate outcome of the model—was also an independent variable. A distinction can be made among the independent variables, in terms of whether or not the model specifies their causes. The causal agents of the entry characteristics are not detailed by the model. As their causes lie outside the model, they constitute the *exogenous* factors (Bollen, 1989; Loehlin, 1992). Environmental interactions, psychological and intermediate outcomes, attitudes, and intentions are all determined within the model, and are the *endogenous* factors (Bollen, 1989; Loehlin, 1992). Bean and Eaton (2000) and Bean and Eaton (2001/2002) both assert that each stage of the model impacts the stage directly following it, and that no stage directly affects any other downstream stage. The exception is actual persistence behavior, which Bean and Eaton (2001/2002) state can be impacted by any preceding stage.

Exogenous Variables. Student entry characteristics included skills and ability measures (high school grade point average; SAT score), self-assessed initial preparedness for the academic and social demands of college, and demographic variables. If a student's SAT Math or Verbal score was missing and their ACT subtest scores were nonmissing, the ACT score was converted to an SAT score using a linear formula (Dorans, 1999) or concordance table (ACT, 2009; Dorans, 1999) depending on the specific subtest. Demographic variables included a student-of-color indicator (see Table 3.2), as well as Pell Grant and financial need—measures of student and family ability to pay for college; ability to pay is known to relate to college student persistence (Baum & Ma, 2014; Scott-Clayton, 2015). Level of parental education, ranging from less-than-high-school to associate's degree (see Table 3.2), was also included as an entry

characteristic to investigate its relationship with college experiences and subsequent variables in the model.

Entry characteristics are exogenous factors, as their causes are not specified by the model (Bollen, 1989). However, while the entry characteristics are determined outside the model, each may relate to how students subsequently experience and interact with the campus environment (Bean & Eaton, 2000). For example, classroom- and major-related experiences, and extent of peer interactions, on a predominantly White campus may vary by students' racial and ethnic identification. Students with fewer financial resources may be less able to "go out" and participate in social activities that require expenditures of money. Because Bean and Eaton (2000) posits that entry characteristics link to subsequent campus environmental interactions and psychological outcomes—and ultimately, persistence—inclusion of demographic variables among students' entry characteristics acknowledges the role they may play in how students experience campus.

For measuring the constructs that constitute the Bean and Eaton (2000) model—including experiences, psychological outcomes, attitudes, and intentions—the SUSES questionnaire presented several, relevant arrays of items. Students were asked to report their experiences in classes, in majors, and within the residence halls. Data on their peer interaction experiences, and their perceptions of the campus environment, were also collected. Students' psychological processes and outcomes were defined by how they felt about their living environment and the campus environment, and by the types and degrees of stress they felt while on campus. Attitudes towards the institution were captured by items asking students if they ever considered leaving the institution (and when) and if they would choose the institution if they could start over again. A separate item asked students if they planned to return for the fall 2010 semester.

Table 3.2
Variables in the Study

Study Variable(s)	Bean and Eaton Model Construct	SUSES Section/Item(s)	Institutional Records	SUSES Response Options	Derivation of Study Variable
First Generation	Entry Characteristics	What is the highest level of education completed by one or both of your parents or guardians? (Mother/female guardian, and father/male guardian responses, collected separately.)	Admissions application	1 Do not know 2 Did not finish high school 3. Graduated from high school/GED 4 Attended college but did not complete degree 5 Completed an associate's degree 6 Completed a bachelor's degree 7 Completed a master's degree 8 Completed a doctoral degree (e.g., Ph.D., Ed.D., J.D., M.D.)	If highest-numbered response is between 2 and 5, student is FG. If highest-numbered response is between 6 and 8, student is not FG. Otherwise, use admissions application data to identify if all parent(s) or guardians— for a given student— have attained less than a baccalaureate degree. If so, student is FG; otherwise, non-FG. Only FG students are in the current study.
Parental Educational Attainment	Entry Characteristics	What is the highest level of education completed by one or both of your parents or guardians? (Mother/female guardian, and father/male guardian responses, collected separately.)	Admissions application	1 Do not know 2 Did not finish high school 3. Graduated from high school/GED 4 Attended college but did not complete degree 5 Completed an associate's degree 6 Completed a bachelor's degree 7 Completed a master's degree 8 Completed a doctoral degree (e.g., Ph.D., Ed.D., J.D., M.D.)	If highest-numbered response was 4 or 5, then “some college.” Otherwise, “no college.”
Race/ethnicity	Entry Characteristics	How would you describe your racial/ethnic identity? (Choose all that apply. If the following categories do not apply to you, please describe yourself using the "other" category.)	Admissions application; Person data	Major identifications (see Appendix 1, “Racial/Ethnic Identity” section for identifications subsumed within major identifications) included: Arab/Arab American; Asian/Asian American; Black/African American; Latino/a; Native American/ American Indian/Alaska Native; Native Hawaiian/ Pacific Islander; White/Caucasian	If student selected one major identification, race/ethnicity was that category. If student selected two or more major identifications, race/ethnicity was “Multiracial.” If student indicated no major identification, then race/ethnicity from institutional records was substituted.

Study Variable(s)	Bean and Eaton Model Construct	SUSES Section/Item(s)	Institutional Records	SUSES Response Options	Derivation of Study Variable
Student of Color	Entry Characteristics	N/A	N/A	N/A	Derived from race/ethnicity. If race/ethnicity was Asian/Asian American, Black/African American, Hispanic/Latino, American Indian, or Hawaiian/Pacific Islander—or, if student was Multiracial including one or more of the aforementioned identifications—then the student was designated a Student of Color.
Gender	Entry Characteristics	What is your gender?	Person data	1 Female 2 Male 3 Transgender 4 Prefer not to respond	SUSES response was used. Otherwise, gender from institutional records (female or male) was substituted.
SAT Math and Verbal	Entry Characteristics	N/A	Admissions records	N/A	Sourced from admissions records. If an SAT score is missing and ACT scores are nonmissing, then SAT total is concorded from ACT subject tests. If an SAT score remains missing, then it is imputed.
High School GPA (HSGPA)	Entry Characteristics	N/A	Admissions records	N/A	From high school transcript. If HSGPA is missing, then it is imputed.
Financial Need	Entry Characteristics	N/A	Financial aid records	N/A	Cost of attending college minus expected family contribution. If both the FAFSA and CSS Profile are submitted, the greater is used. If student did not submit an aid application, then financial need is set to zero.
Pell Grant recipient	Entry Characteristics	N/A	Financial aid records (FAFSA)	N/A	If student was a Pell Grant recipient in the first year then Pell=1, else 0.

Study Variable(s)	Bean and Eaton Model Construct	SUSES Section/Item(s)	Institutional Records	SUSES Response Options	Derivation of Study Variable
Support program participation	Entry Characteristics	N/A	Student records; program and athletics records	N/A	Includes participation in one or more of: Learning Communities; federal, state, or institutional opportunity program; STEM program; leadership development program; inter-collegiate athletics (was a member of an inter-collegiate team); scholarship athletics (received athletically-related financial aid). 1 if participated; 0 otherwise.
Preparedness: Academic; Social environment	Entry Characteristics	Sources of Stress and Support at SU: Preparedness	N/A	Semantic distance; 1="Very unprepared" to 5="Very prepared" with "Not sure" option	Utilized as is.
Importance of graduating from the university to: oneself; one's family	Entry Characteristics	Staying at SU: How important...	N/A	Semantic distance; 1="Very unimportant" to 5="Very important" with "Unsure" option	Utilized as is.
Institution was first-choice school	Entry Characteristics	"Choosing SU" section; "Was SU your first-choice school" item	N/A	1="Yes"; 2="No"	EFA determined scale(s)
In-class experiences: extent of various experiences and perceptions	Environmental Interactions	Classroom Experiences: Your classroom experiences so far	N/A	Frequency; 1 = "Never" to 5="Very often" with "N/A" option	EFA determined scale(s)
Experiences in current major: extent of various experiences and perceptions	Environmental Interactions	Experiences in your major	N/A	Frequency; 1 = "Never" to 5="Very often"	EFA determined scale(s)
Peer interactions: extent of various interactions with <i>same</i> racial/ethnic group	Environmental Interactions	Peer Interactions: Extent...with students from my racial/ethnic group	N/A	Frequency; 1 = "Never" to 5="Very often" with "N/A" option	EFA determined scale(s)

Study Variable(s)	Bean and Eaton Model Construct	SUSES Section/Item(s)	Institutional Records	SUSES Response Options	Derivation of Study Variable
Peer interactions: extent of various interactions with <i>different</i> racial/ethnic groups	Environmental Interactions	Peer Interactions: Extent...with students from different racial/ethnic groups	N/A	Frequency; 1 = "Never" to 5="Very often" with "N/A" option	EFA determined scale(s)
Peer interactions: agreement about various settings and types of interactions	Environmental Interactions	Peer Interactions: opportunities; importance; learning	N/A	Likert-type; 1 = "Strongly disagree" to 5="Strongly agree"	EFA determined scale(s)
Residence hall experiences: extent of various interactions and perceptions	Environmental Interactions	Your residence hall experience: respect; comfort; race-related discrimination, stereotyping, and feeling unwelcomed	N/A	Frequency; 1 = "Never" to 5="Very often" with "N/A" option	EFA determined scale(s)
University's commitment to, facilitation of, and level of emphasis on diversity	Environmental Interactions	Institutional Practices	N/A	Likert-type; 1 = "Strongly disagree" to 5="Strongly agree" with "Do not know" option	EFA determined scale(s)
Living Environment: how you feel	Psychological Outcomes	Your residence hall experience: How you feel in your living environment	N/A	Semantic differential: (un)comfortable; (un)safe; isolated/connected; (dis)respected; segregated/integrated	EFA determined scale(s)
Campus Environment: perceptions	Psychological Outcomes	Campus Environment: Campus environment from your point of view	N/A	Semantic differential: hostile/friendly; (dis)respectful; (in)sensitive (un)supportive segregated/integrated	EFA determined scale(s)
Campus Environment: how you feel	Psychological Outcomes	Campus Environment: How you feel on campus	N/A	Semantic differential: (un)comfortable, (un)safe; isolated/connected; discouraged/encouraged (un)welcomed	EFA determined scale(s)

Study Variable(s)	Bean and Eaton Model Construct	SUSES Section/Item(s)	Institutional Records	SUSES Response Options	Derivation of Study Variable
Stress: Academics	Psychological Outcomes	Sources of Stress and Support at SU: academics stress	N/A	Frequency; 0="No stress" to 3="Severe stress"	EFA determined scale(s)
Stress: Study skills	Psychological Outcomes	Sources of Stress and Support at SU: study skills stress	N/A	Frequency; 0="No stress" to 3="Severe stress"	EFA determined scale(s)
Stress: Financial	Psychological Outcomes	Sources of Stress and Support at SU: financial stress	N/A	Frequency; 0="No stress" to 3="Severe stress"	EFA determined scale(s)
Stress: Family	Psychological Outcomes	Sources of Stress and Support at SU: family stress	N/A	Frequency; 0="No stress" to 3="Severe stress"	EFA determined scale(s)
Stress: Campus Life	Psychological Outcomes	Sources of Stress and Support at SU: campus life stress	N/A	Frequency; 0="No stress" to 3="Severe stress"	EFA determined scale(s)
Stress: Relationships	Psychological Outcomes	Sources of Stress and Support at SU: relationships stress	N/A	Frequency; 0="No stress" to 3="Severe stress"	EFA determined scale(s)
Stress: Health and wellness	Psychological Outcomes	Sources of Stress and Support at SU: health and wellness stress	N/A	Frequency; 0="No stress" to 3="Severe stress"	EFA determined scale(s)
Considered leaving the institution	Attitudes	Staying at SU: Thought of leaving SU	N/A	1="Yes"; 2="No"	EFA determined scale(s)
Would choose the same institution again	Attitudes	Staying at SU: If start over again...choose SU	N/A	Semantic differential; 1="Definitely no" to 4="Definitely yes"	EFA determined scale(s)
Planning to return next semester	Intention	Staying at SU: Plans... for the fall 2010 semester	N/A	Categorical; "Yes" (1) "No... graduating" (2) "No... study abroad" (3) "No...transferring" (4) "No...other" (5) "Undecided" (6)	For analysis, item responses were remapped as follows (there were no graduates in the 1 st year): Yes = 2; No (study abroad)=2; Undecided=1; No (transfer/other)=0 EFA determined scale(s), if any

Study Variable(s)	Bean and Eaton Model Construct	SUSES Section/Item(s)	Institutional Records	SUSES Response Options	Derivation of Study Variable
Academic progress 1 st semester, 1 st year, 2 nd year, 3 rd year	Intermediate Outcome	N/A	Student records	N/A	1 st semester: at least 12 credits and 2.0 GPA: 1; 0 otherwise. 1 st year: at least 24 credits and 2.0 GPA: 1; 0 otherwise. 2 nd year: if at least 54 credits and 2.0 GPA: 1; 0 otherwise. 3 rd year: if at least 84 credits and 2.0 GPA: 1; 0 otherwise.
Retention after the 2 nd year	Behavior	N/A	Student records	N/A	If enrolled or graduated at census of the 3 rd fall semester: 1; 0 otherwise.
Graduation within 4 (6) years	Behavior	N/A	Student records	N/A	If graduated by August 31 st of the 4 th (6 th) year: 1; 0 otherwise.

Missing Data

Survey research on human participants is subject to the problem of missing data (Allison, 2002; Cox et al., 2014). Items are skipped, intentionally or accidentally. Of all the items on the SUSES questionnaire, a subset of 144 questions (counting the racial/ethnic identity items as one question) captured the perceptual, experiential, and demographic data applicable to this study. Sixty percent of SUSES respondents left between 1 and 10 percent of items unanswered; 17 percent of respondents had missing data rates in excess of 10%. Only 23% of respondents answered all items. The prevalence of missing SUSES responses necessitated a strategy for ameliorating the resulting gaps in data.

One solution to missing data is to omit cases with missing data from the entire analysis (i.e., listwise deletion) or, more narrowly, remove cases only when they show missing data on variables specific to a particular statistical routine (i.e., pairwise deletion) (Cheema, 2014; Cox et al., 2014). For the SUSES dataset, listwise deletion was applied to participants not responding beyond the third item of the survey (i.e., “What is your academic class level”). This extent of

nonresponse meant that the student provided no data on any of their campus experiences. However, disadvantages of listwise and pairwise deletion include reduced power for statistical analyses as a result of decreased sample size, and possible lack of generalizability of results (Cheema, 2014). Another option is to replace (i.e., impute) missing values for an item with the mean of nonmissing responses for that item, or use regression methods to estimate values where data are missing. However, imputation via mean or linear substitution artificially reduces the variation of the resulting distribution of mixed actual and imputed responses (Roth, 1994), thereby biasing parameter estimates and their standard errors (Cheema, 2014; Schafer & Graham, 2002).

For the SUSES data, the expectation-maximization (EM) algorithm was utilized for imputation. Using the pattern of observed values, the EM process generated estimated values for missing data. Then, mean and covariance patterns were re-estimated using this full-data dataset, which in turn was used to generate new estimated values for the missing values (Yim, 2015). The process of iteratively estimating the means and covariances of the dataset based on new estimated data values was repeated until the change in estimates was smaller than 0.0001. The EM method of imputation maintains the full number of dataset cases, produces imputation estimates that better reflect the inherent variability of the original, nonmissing data, and produces unbiased standard errors of estimates (Cheema, 2014). Another benefit was its relative ease of implementation.

Data Analysis

Statistical Techniques

The conceptual framework for this study drew from Bean and Eaton's (2000) psychological model of college student retention. The model posits that actual student

persistence (i.e., behavior) relates to the student's intent to stay at the institution. Intent is contingent on attitudes, which are in turn formed from preceding campus experiences and psychological outcomes. Student entry characteristics are also a part of the model, and they may relate directly to campus experiences, attitudes, and intentions as well as outcomes. Thus, instantiation of the Bean and Eaton model for the purpose of testing it through statistical analysis necessitated a method for gauging students on pre-entry attributes as well as the psychological constructs of the model. The dataset for testing the model relied on SUSES responses as well as student records data.

SAS/STAT® software version 9.4 was employed to accomplish the statistical analyses. The specific procedures used were PROC FACTOR for factor analysis and PROC CALIS for path analysis (Narayanan, 2012; O'Rourke & Hatcher, 2013). To clarify the factors yielded by the factor analysis and assess the simple structure of the solution, orthogonal (i.e., varimax) factor rotation was conducted. To evaluate the consistency of factor structure generated by the factor analysis, an oblique (i.e., promax) rotation was also performed. Because by construction some of the variables in the path analyses were not normally distributed, weighted least squares (WLS) was utilized for estimation of the path models (Bollen 1989; SAS Institute Inc., 2013).

Descriptive Analysis. To understand FG students in terms of the data, means (for quantitative, Likert-type or scale data) and frequencies (for categorical data) were completed for each variable relating to the analysis.

Factor Analysis. Many of the elements of the Bean and Eaton (2000) model are latent factors that, while not directly observable, were measured through the SUSES data. Along with other pieces of data, the SUSES items solicited students' perceptions, experiences, attitudes, and intentions in relation to their campus experiences—much of the subject matter of the Bean and

Eaton model. Since the SUSES items aligned with the Bean and Eaton constructs, student responses to SUSES were interpreted as representations of the latent psychological constructs put forth by Bean and Eaton in their model.

To express the latent factors in terms of SUSES items, factor analysis was employed. Factor analysis is a frequently-used and suitable procedure for assessing relationships among observed variables (Beavers et al., 2013; Furr, 2018), for re-expressing the set of observed variables as a smaller set of new scales (Velicer & Fava, 1998), and for uncovering latent variables (Fabrigar et al., 1999; Schmitt, 2011). Latent factors—such as those of the Bean and Eaton model—are measured through a set of observed variables, which can be considered representative of a much larger universe of items that all measure the factor (Furr, 2018; Velicer & Fava, 1998). Because observed variables are imperfect measures of factors, a factor should ideally be measured by three or more observed variables (MacCallum et al., 1999; Velicer & Fava, 1998)—though under certain conditions, two variables may suffice (Bollen, 1989).

For the present study, an exploratory factor analysis (EFA) was accomplished to identify latent factors, and express them for empirical analysis as functions of observed variables (Bollen, 1989; Loehlin, 1992). The content of the SUSES questionnaire was informed by research literature, existing student surveys, practitioner knowledge of student retention, and functional areas of the institution applicable to retention and retention efforts (e.g., classrooms; residence halls). Thus, the survey items bore only incidental relationship to theoretical models of retention. Absent a clear relationship of the observed variables to the latent factors in the Bean and Eaton (2000, 2001/2002) theoretical model, an exploratory—rather than confirmatory—factor analysis was employed (Bollen, 1989).

Subsequent to the EFA, a path model—consisting of the latent factors, plus other, single-item measures—was employed to specify the relationships among the variables in the model (Bollen, 1989; Loehlin, 1992) in a manner consistent with the Bean and Eaton framework. Because identification of factors in factor analysis requires the existence of linear interrelationships among observed variables, the procedure generally requires correlation coefficients of 0.30 or greater among the observed variables (Tabachnick & Fidell, 2001). Thus the magnitude of associations within a set of variables is ascertained through evaluation of its correlation matrix.

Two common measures of the size of correlation within a correlation matrix are the Kaiser-Meyer-Olkin (KMO) Test of Sampling Adequacy (Kaiser, 1970), and Bartlett's Test of Sphericity (Bartlett, 1950). The factorability of a correlation matrix is examined through the KMO and Bartlett's tests (Beavers et al., 2013). For a set of variables, the overall KMO test can be considered as the ratio of shared variation to shared plus unique variation (Dziuban & Shirkey, 1974). Kaiser (1974) suggested levels of factorability based on KMO test values. Any value below 0.50 was "unacceptable," while values in the .50s, .60s, .70s, .80s, and .90s were dubbed "miserable," "mediocre," "middling," "meritorious," and "marvelous" respectively (Kaiser, 1974, p. 35). Bartlett's Test of Sphericity (Bartlett, 1950) compares an observed correlation matrix to one in which all correlations are zero (Beavers et al., 2013; Dziuban & Shirkey, 1974; Maxwell, 1959). If the test is statistically significant, the conclusion is that the data are factorable (Dziuban & Shirkey, 1974). To check the factorability of SUSES data, the KMO and Bartlett tests were performed on 141 SUSES items. A preliminary FG group was constructed, based on an inspection of systems data and on SUSES survey participants' responses to the *highest level of education completed* survey item. The data revealed a KMO

value of .88, and a Bartlett's test p-value of less than .0001. These results provided evidence that the tested SUSES items were appropriate for factor analysis for the FG students.

Path Analysis. Once the EFA was completed, analysis of the path (i.e., theoretical) model proceeded. This involved exploring and testing the theoretical model by evaluating the correlational relationships among the predictors and outcomes. Path analysis is an appropriate method for analyzing and testing correlational patterns among measured variables and scales, and for comparing observed patterns to models specified by theory (Bollen, 1989; Chin, 1998; Teo et al., 2013). Within a path analysis, individual path coefficients (i.e., relationships among variables) within the model can also be tested. Based on empirical patterns within the data, the analysis can also point to modifications that might be made to the model. If deemed appropriate—i.e., that they are in accordance with theoretical considerations, and do not improperly disrupt established aspects of the model (Loehlin, 1992)—such modifications can be implemented which often lead to an improved fit of the model to the data.

Central to the use of path models is the testing of the fit of the relationships specified by the overall model against the full set of patterns in the observed data. The degree of correspondence between model and data was quantified through three goodness-of-fit statistics, as recommended by O'Rourke and Hatcher (2013). The Comparative Fit Index (CFI) is an incremental fit measure, comparing a null model (i.e., no paths from exogenous to endogenous variables, no paths from endogenous to endogenous variables) to a particular, specified model (Kenny, 2020). The CFI does not adjust for model complexity; it returns a more favorable score for models of greater complexity (Sun, 2005). Values of CFI over .94 indicate good fit between data and model (Hu & Bentler, 1999; O'Rourke & Hatcher, 2013). The second measure of fit, the Standardized Root Mean Square Residual (SRMR), is an absolute measure—taking a value of

zero when the fit is perfect. The SRMR is interpreted as the standardized difference between observed inter-item correlations, and correlations as predicted by the model (Kenny, 2020; O'Rourke & Hatcher, 2013). Like the CFI, the SRMR does not adjust for model complexity. A value of SRMR below .09 indicates fair fit, while values below .055 suggest close fit (Hu & Bentler, 1999; O'Rourke & Hatcher, 2013). The third measure of fit is the Root Mean Square Error of Approximation (RMSEA). While many fit indices including the CFI and SRMR advantage models of greater complexity, the RMSEA—a parsimony index—compensates for model complexity and thus does not disadvantage parsimonious models. It evaluates relationships among variables as specified in a model against the full set of relationships among the variables in the population, and returns the average discrepancy (Byrne, 2009; Sun, 2005). RMSEA values less than .09 indicate minimum acceptable fit, while values under .06 suggest high likelihood of a good-fitting model (Browne & Cudeck, 1989; Hu & Bentler, 1999; O'Rourke & Hatcher, 2013). As the RMSEA is subject to sampling variability and a confidence interval for its population value can be constructed, the upper bound of its 90% confidence interval also serves as a measure of model fit (MacCallum et al., 1996). Thus, a RMSEA upper confidence limit below .09 or .06 suggests adequate or ideal model fit, respectively (O'Rourke & Hatcher, 2013).

Research Questions. The exploratory factor analysis and path analyses were respectively utilized to answer the following two research questions:

1. Is there evidence that the survey items constitute latent constructs (i.e., factors) for FG students? Will the exploratory factor analysis show that individual survey items are arrangeable into a smaller number of groups of items, with each group of items representing a latent construct?

2. Is there evidence that the modified Bean and Eaton (2000, 2001/2002) psychological model of college student retention represents the relationships and causal flow among the variables in the model? Does the path analysis representing the model show an adequate fit to the data?

Power Analysis

The subject matter of research—i.e., the research topic or problem—typically generates or gives rise to specific research questions. In quantitative research, questions involve descriptions, correlations, and between-group contrasts of variables (Creswell, 2002). Hypotheses also involve variables, and are comprised of statements that specify null and alternative hypotheses. Null and alternative hypotheses are logically contradictory; by construction of the hypotheses, both cannot be true. Normally, the null hypothesis is a prediction of no effect or difference, while the alternative hypothesis posits a nonzero (or some specified magnitude of) effect or difference (Creswell, 2002). Through application of statistical procedures, hypotheses can be tested. In the context of statistical hypothesis testing, a test's sensitivity to the alternative hypothesis is measured by the power of the test.

In hypothesis testing, the null is usually assumed to be true, unless the statistical test produces some threshold level of evidence that it is false—in which case, the null hypothesis is rejected and the alternative hypothesis is assumed true. For a given hypothesis test, the likelihood that the null hypothesis will be rejected is the power of the test (Cohen, 1988). Because they are probabilities, the numerical values of power range between zero and one hundred percent. The higher the number, the greater the probability that the null hypothesis will be rejected. Because power impacts the results of statistical tests including those of model fit (Bollen, 1989), it is an important consideration in path analysis.

The power of a given statistical test is a function of three factors—the level of statistical significance of the test, the accuracy of the statistic obtained from the sample, and the size of the effect associated with the alternative hypothesis (Cohen, 1988). Significance is the probability of rejecting a null hypothesis that, in actuality, is true. The most typical values of significance (p) chosen by researchers are 0.05 or 0.01, or a 5% or 1% chance respectively of erroneously rejecting a true null hypothesis (Creswell, 2002). All else equal, lower numerical values of p relate to lower values of power. The accuracy of a sample statistic is dependent on the sample size, as well as the presence and extent of extraneous influences (i.e., “noise”) that speciously increase the variability of the sample statistic. The greater the sample size, and the less the noise, the greater the power of the test. The effect size, occasioned when a null hypothesis is found false through testing, is the magnitude of the finding associated with the alternative hypothesis. Larger effect sizes result in greater power. By way of illustration, suppose that the grade point average (GPA) of a group of students is assumed equal to 3.00 (i.e., the null hypothesis). In this case, the alternative hypothesis is that the GPA is not equal to 3.00. Upon measurement of GPA for the group, a sample mean GPA of 3.20 will produce a statistical test with greater power than a sample mean of 3.10—as will a larger—as opposed to smaller—sample.

Path Analysis. In the path analytic context, statistical power enables the researcher to identify and reject models that do not provide a good fit to observed data. In practice, power relates to the ability of statistical tests to discriminate among two competing path models—the null and alternative models (Loehlin, 1992). No single approach to power analysis has achieved dominance (Teo et al., 2013). However, two common approaches have emerged. One involves sample size as a criterion. Nunnally (1967) suggested a sample size equal to ten times the number of variables in the model. Raykov and Widaman (1995), Jackson (2003), and Kline

(2016) recommend a minimum of 10 participants per estimated model parameter (i.e., paths, variances, and covariances). This minimum should be increased if the statistical assumptions of path analysis are not met. For example, if variables are not normally distributed, the ratio of participants to parameters should be increased to 15 to 1 (Teo et al., 2013). Minimum total sample sizes have also been suggested. For a variety of reasons including model fit and stability, Anderson and Gerbing (1988), Ding et al. (1995), and Loehlin (1992) advise against using sample sizes of less than 100 to 150. Kenny (2020) cites a sample size of 200 for structural equation modeling research, with smaller samples acceptable if certain conditions are met.

Rule-of-thumb approaches to sample size, however, are generalities. Given the circumstances of a particular study, the variety and lack of consistency of general recommendations fails to provide a best or optimal criterion. These approaches do not adjust for nuances particular to the data in use for any particular study, casting doubt on their applicability for any specific model (MacCallum et al., 1999; Westland, 2010; Wolf et al., 2013). A review of literature on sample size led Westland (2010) to conclude that "...existing sample size heuristics are misleading researchers...like the 'rule of 10'" (p. 482). A simulation study of sample sizes by Wolf et al. (2013) found required sample sizes ranging from 30 to 480 across a variety of models. For the same study, application of Nunnally's (2010) rule—10 cases per variable—led to recommended sample sizes ranging from 40 to 240 across models. Wolf et al. (2013) also found that required sample sizes were not always linearly related to the size of the model. The findings of MacCallum et al. (1999), Westland (2010), and Wolf et al. (2013) establish the shortcomings of rule-of-thumb approaches to sample size and power, and argue for methods that are better suited to specific models.

The second class of methods for determining power for path analyses makes use of measures that result from applying specific models to data. By making use of information obtained from testing specific models on specific datasets, they improve upon rule-of-thumb approaches. With these approaches, two models are fit to the data—a null model, and an alternative model. Power is expressed as the probability of rejecting the null model given that the alternative model is true. The method of Satorra and Saris (1985) requires that first, the alternative model be fit to the data. This produces an implied covariance matrix, which is then utilized for fitting the null model. The chi-square value that results from the fitted null model will, with the aid of statistical software or tables of the cumulative noncentral chi-square distribution, provide the probability of rejecting the null model if the alternative model is true (Loehlin, 1992). Satorra and Saris (1985) validated their approach against simulation experiments, concluding it to be suitable for practical applications. Subsequent work by MacCallum et al., (1996) offered a simplified method for power analysis. Two models are run on the same data—a null model, and an alternate model. From each model, a statistic measuring its lack of fit—the root mean square error of approximation (RMSEA)—is produced (Browne & Cudeck, 1992; MacCallum et al., 1996; Steiger, 2016). By referencing the RMSEA values and the cumulative noncentral chi-square distribution, a power estimate can be obtained (MacCallum et al., 1996).

For the present study, a preliminary power analysis was conducted. Given that the maximum sample size for this study was fixed and could not be increased, the ability to gain power through increasing the sample size was not possible. It is thus important to know the limits of power—i.e., the probability that the samples and models of this study can detect true effects. A preliminary FG group was formed through SUSES and system data; the size of this

group was approximately 500. Several pairs of path models were run. Each pair contained a null model, and an alternative model with one extra path. A significance criterion (i.e., p-value) of 0.05 was adopted for all models. By comparing RMSEA values within each pair and using the method of MacCallum et al. (1996), it was possible to estimate the power associated with an addition of one path to an existing model. The exercise showed power to vary widely. At the low end was a power estimate of only 15 percent. This occurred for the model containing few parameters (i.e., 10 degrees of freedom (df)) and a RMSEA shift of less than 0.01. Larger models with higher df showed somewhat higher power approaching 35%. Power jumped when the RMSEA difference was 0.02. Then, power ranged from nearly 40% (10-df model) to over 90% (50-df model).

Clearly, sample size and RMSEA both factor significantly into power. Larger values of each are associated with greater power. As a convention, Cohen (1988) suggested a power level of 80%. Many of the preliminary power estimates for this study failed to approach this standard. For some models, there may be a less than one-in-four (i.e., 25%) probability of obtaining significance when the actual path coefficient is as large as 0.20 or -0.20. One remedy was to utilize a significance criterion of 0.10 rather than 0.05, which preliminary analyses showed can raise power estimates by as much as 50%. However, relaxing the significance standard from 0.05 to 0.10 would increase the likelihood of rejecting null hypotheses that are actually true. Another consideration is to discount the importance of individual model effects and instead focus on the fit (statistical, and substantive) of the overall model (Kline, 2016). Additional research in this area could provide further evidence, replication, or information through which to interpret the results of this study.

Limitations

Like all studies, this study is conditional upon limitations. These are primarily limitations of methodology, but they do overlap with conceptual considerations as well. One constraint of this study is that the FG population was limited to first-year baccalaureate-seeking students enrolled in a large, selective, doctoral-granting private residential institution in the northeast. As less than 12% of FG students attend a private, 4-year institution, the results of this study may be of limited generalizability to the broader population of FG students, many of whom attend public 2-year colleges (Cataldi et al., 2018). Furthermore, the undergraduate population at the institution of study—including FG students—was comprised of “traditional” students, most between 18 and 22 years of age and first-time higher education participants. Nationally, an increasing number of nontraditional and older students are attending college or going back to college to continue their learning, Many FG students attend part-time or have children; these conditions present challenges to persistence and degree completion (Chen & Carroll 2005; Nuñez & Cuccaro-Alamin, 1998; Terenzini et al. 1996) and were not faced by most students in the present study. If they did, the results may have been different.

This study did not separately model students of color and White students. While Johnson et al. (2014) found distinct patterns of relationships among the factors it examined (institutional environment, psychological outcomes, attitudes, intention, and behavior) for student of color and White students, separate analyses of these groups would have entailed sample sizes of insufficient power to detects effects, given the relatively large number of variables in the model. While the present study used a model that included information on students’ racial/ethnic identification, separate models may have led to a better fit of the data and to different results and conclusions.

Another limitation of the study was the use of single-phase, cross-sectional survey data for estimating a longitudinal model. With the survey administered at just one point in time in students' tenure at the institution (i.e., their second semester), their experiences, perceptions, and attitudes may not have fully formed or may have been changeable with respect to the moment of survey administration. For example, students' perceptions as collected in the first year may have changed in the second year, adding imprecision in the modeling of retention into the third year as based on the first-year data. Additional points of data collection would have allowed for more congruence between the data that came off system—longitudinal data—and the survey data.

This study framed and modeled persistence as a sequential process. While a sequential layout of variables—from entry skills through ultimate persistence outcome—makes sense from a temporal standpoint, not all retention processes are necessarily linear. While various retention models indicate the possibility of iterative or feedback loops among stages, little research has examined such relationships (Terenzini & Reason, 2005) and the present study is no exception. This is an under-researched area presenting an opportunity for future scholarship.

While stress among college students is a prevalent aspect of their psychological experience, it is not the only facet of mental health that may influence institutional commitment, academic progress, and, ultimately, persistence. Research suggests that loneliness, depression, exhaustion, and anxiety may also arise from campus experiences, and may have a deleterious impact on FG students' attitudes towards the institution, academic performance and persistence (Arbona et al., 2018; Jenkins et al., 2013; Stebleton et al., 2014). In the present study, inclusion of additional criteria relating to mental health may have increased the sensitivity and power of the study to identify psychological factors related to persistence—and potentially further underscore the importance of supporting student wellness.

Summary

In this single-institution study of factors related to the persistence of FG students, extensive demographic, admissions, financial aid, and academic data were collected from the institutional records system and from a survey asking students about their experiences on campus including in the classroom and residence hall, their experiences with discrimination and campus climate, the severity of various sources of stress, their attitudes towards the institution, and their intent to persist. The relationships among these variables as they relate to actual persistence were assessed using a modified version of the Bean and Eaton (2000, 2001/2002) psychological model of college student retention. To explore the data and provide evidence related to the two research questions, exploratory factor analysis and path analysis were utilized.

Chapter Four: Results

The purpose of this study was to model—via Bean and Eaton’s (2000, 2001/2002) psychological model of college student retention—the actual persistence behavior of first-year, first-generation college matriculates at a large, private, selective, residential institution in the Northeast. The design of the study was driven by two research questions:

1. Is there evidence that the survey items constitute latent constructs (i.e., factors) for FG students? Will the exploratory factor analysis show that individual survey items are arrangeable into a smaller number of groups of items, with each group of items representing a latent construct?
2. Is there evidence that the modified Bean and Eaton (2000, 2001/2002) psychological model of college student retention represents the relationships and causal flow among the variables in the model? Does the path analysis representing the model show an adequate fit to the data?

The Bean and Eaton (2000, 2001/2002) model was adapted to reflect the cross-sectional collection of survey data capturing students’ entry characteristics, campus experiences and perceptions, psychological outcomes, institutional commitment, and intent to persist. Because systems data provided not only additional entry characteristics, retention, and graduation but also enabled calculation of SAP at specific point in students’ programs, the modified model borrowed Johnson et al.’s (2014) addition of first-semester SAP to the environmental interactions section of the model. Descriptive statistics were provided to characterize the study participants in terms of the research variables. For each quantitative variable, the mean and standard deviation were calculated. For categorical variable, frequency counts and percentages were produced. An exploratory factor analysis was conducted on the quantitative survey items. The EFA drew upon

the correlational structure across individual survey items to group the items by their correlations, with each set of inter-correlating items providing evidence of an underlying construct (i.e. factor). Each factor was measured through creation of a scale consisting of the items constituting the factor, and a reliability analysis was conducted for each of the scales. The EFA not only identified constructs and enabled their measurement, but also accomplished data reduction—reducing dozens of individual survey items into a smaller number of factors each with acceptable reliability and interpretability. In the final step of the analysis, a path analytic model was employed to capture and test the relationships among the research variables in the study, as specified by the adapted Bean and Eaton (2000, 2001/2002) model of persistence. The path model also provided a means to test the degree of fit between the hypothesized model and the observed data. All results were produced using SAS/BASE[®] and SAS/STAT[®] software.

Entry Characteristics, Academic Progress, and Persistence

Table 4.1 displays descriptive statistics for the entry characteristics, academic progress, and persistence of the study participants. Just over one-half (51%; $n=236$) of the participants' parents attended college (though did not attain a baccalaureate degree), while 49% ($n=223$) had no college experience. Students of Color comprised 58% ($n=267$) of the sample; 42% ($n=192$) did not identify as a Student of Color. Participants were 64% ($n=295$) female while 36% ($n=164$) were male. Participants' mean SAT Math and Verbal scores were 580 and 545 respectively, while mean high school GPA was 3.65. The average financial need of participants was \$39,815; 56% ($n=159$) were Pell Grant recipients and 44% ($n=200$) were not Pell recipients. Participation in each support program was as follows: Learning Communities: 29% ($n=135$); opportunity program: 10% ($n=44$); STEM program: 2% ($n=8$); leadership development: 4% ($n=19$); inter-collegiate athletics: 4% ($n=17$); scholarship athletics: 2% ($n=8$). Across all support programs,

41% ($n=186$) of the sample participated in one or more programs while 59% ($n=273$) did not participate in any program.

Table 4.1

Entry Characteristics, Academic Outcomes, and Persistence Behavior					
Variable	Possible values	N	%	Mean	SD
<i>Entry characteristics</i>					
Parental Educational Attainment	Some college	236	51.4		
	No college	223	48.6		
Race/ethnicity	Student of Color	267	58.2		
	Not a Student of Color	192	41.8		
Gender	Female	295	64.3		
	Male	164	35.7		
SAT Math Score ^a	0-800			580	86
SAT Verbal Score ^a	0-800			545	77
High School GPA ^a	0-4.33			3.65	0.40
Financial Need ^a	0-51999			\$ 39,185	\$ 13,189
Pell Grant	Recipient	259	56.4		
	Non-recipient	200	43.6		
Support Program Participation ^b	Learning Communities	135	29.4		
	Opportunity Program	44	9.6		
	STEM Program	8	1.7		
	Leadership Development	19	4.1		
	Inter-collegiate Athletics	17	3.7		
	Scholarship Athletics	8	1.7		
	Program participation (one or more programs)	186	40.5		
	No participation	273	59.5		
	Academic Demands Preparedness ^b	1 = Very unprepared to 4 = very prepared			2.94
Social Environment Preparedness ^b	1 = Very unprepared to 4 = very prepared			2.83	0.79
Importance of Graduating- to Oneself	1 = Very unimportant to 5 = very important			4.50	0.99
Importance of Graduating- to Family	1 = Very unimportant to 5 = very important			4.38	1.03
<i>Previous Semester Academic Performance</i>					
Academic Progress 1st Semester	Satisfactory progress	412	89.8		
	Unsatisfactory progress	47	10.2		
<i>Intermediate Outcomes</i>					
Academic Progress 1st Year	Satisfactory progress	423	92.2		
	Unsatisfactory progress	36	7.8		
Academic Progress 2nd Year	Satisfactory progress	382	83.2		
	Unsatisfactory progress	77	16.8		
Academic Progress 3rd Year	Satisfactory progress	359	78.2		
	Unsatisfactory progress	100	21.8		
<i>Persistence Behavior</i>					
Retention to the Third Year	Retained	406	88.4		
	Not retained	53	11.6		
Graduated within Four Years	Graduated	305	66.4		
	Not graduated	154	33.6		
Graduated within Six Years	Graduated	370	80.6		
	Not graduated	89	19.4		

^a Institutional data

^b Survey data

Additional entry characteristics included participants' perceptions of their preparedness upon entering college, and the importance that they and their families placed on graduating from the institution. Participants rated their level of preparedness for the academic demands, and the

social environment, on a scale from 1=very unprepared to 4=very prepared. The respective means were 2.94 and 2.83, indicating—on average—somewhat more preparedness than unpreparedness. The importance items served as measures of student resilience. Importance of graduating from the institution—to oneself, and to one's family—were each captured on a scale from 1=very unimportant to 5=very important, with 3=neither unimportant or important. Mean importance to self was 4.50 while mean importance to one's family was 4.38, on average a high level of importance.

Academic progress after the first semester, first year, second year, and third year were each measured by twin criteria: accumulation of earned credits, plus a cumulative GPA of 2.0 or higher. The credit standard was defined as the minimum number of credits needed to achieve a specific class standing—i.e., sophomore, junior, or senior standing at the end of the first, second, and third year respectively; the first-semester credit standard was defined as one-half of the credits needed to achieve sophomore standing (see Table 3.2). After the first semester, 90% ($n = 412$) of participants showed satisfactory academic progress (SAP) while 10% ($n=47$) failed to meet the standard. At the end of the first year, 92% ($n = 423$) made SAP; 8% ($n=36$) did not. After the second year, 83% ($n=382$) had made SAP while 17% ($n=77$) did not reach the standard. After three years, 78% ($n=359$) had made SAP while 22% ($n=100$) did not.

Persistence was defined as retention and graduation rates. Each of these variables served as an outcome measure in a path model. The third-year retention rate of study participants was 88%, with 406 students enrolled in the fall semester of the third year and 12% ($n=53$) not enrolled in this semester. Participants' four-year graduation rate was 66% ($n=305$); 34% ($n=154$) failed to graduate within four years. The six-year graduation rate of participants was 81% ($n=370$), while 19% ($n=89$) did not graduate.

Exploratory Factor Analysis

To ascertain if participants' responses to survey items provide evidence of latent, underlying constructs with regard to their college experience, interactions, feeling, and attitudes—i.e. to determine if individual survey items were arrangeable into a smaller number of groups of items, with each group of items representing a latent construct applicable to the modified Bean and Eaton (2000, 2001/2002) model—a principal axis exploratory factor analysis (EFA) was conducted. An EFA assumes no a priori connections between latent factors and observed variables; the connections as well as the number of latent factors are identified through the EFA process (Bollen, 1989; Loehlin, 1992). The suitability of the final-sample correlation matrix for supporting an EFA was tested through the Kaiser-Meyer-Olkin (KMO) Test of Sampling Adequacy (Kaiser, 1970), and Bartlett's Test of Sphericity (Bartlett, 1950). The observed KMO statistic was 0.87, well above the recommended minimum value of 0.50 and—according to KMO ranges provided by Kaiser (1974)—a “meritorious” value (p. 35). The Bartlett's Test was highly significant ($X^2(9,180) = 45,224; p < .0001$), indicating that the item intercorrelations were sufficiently large to warrant undertaking an EFA.

To determine the number of factors to retain, an initial factor analysis was run. Thirty factors had an eigenvalue greater than or equal to one, the minimum value on the Kaiser-Guttman rule (Kaiser, 1960; Loehlin, 1992). A review of the scree plot (Cattell, 1966) provided additional insight as to how many factors to retain. However, rather than evincing one clear break point, the plot showed a smooth inflection from the 8th through the 14th factor, suggesting a retained factor count within this range—many fewer than the thirty indicated by the Kaiser-Guttman rule. Another aid to determining how many factors to retain is the proportion of variance in the dataset that accounted for by each factor (O'Rourke & Hatcher, 2013). Cutoff

values for proportion of variance accounted for are at the discretion of the researcher (Kim & Mueller, 1978; O'Rourke & Hatcher, 2013); Kim and Mueller (1978) state possible values as one, five, or ten percent (p. 44). For the present study in which the EFA was intended to identify and allow a potential diversity of factors—not a single, or small number of, “general” factors (Bollen, 1989, p. 226)—a relatively low cutoff of 1% was adopted. This criterion value suggested that 20 factors be retained, a number intermediate to the number suggested by the Guttman rule (i.e., 30 factors) and the scree plot (i.e. 8 to 14 factors).

To provide further guidance as to the number of factors to retain, a factor rotation was applied to the factor solution (Kim & Mueller, 1978). Factor rotation aids interpretation of factors by more clearly revealing which items load strongly—and which do not—on a given factor. The strongly-loading items lend interpretability to the factor and—in concert with the researcher’s substantive knowledge of the area of inquiry—assist in the decision to retain or reject the factor. The interpretability or “meaningfulness” (Kaiser, 1960, p. 145) of the factor is “perhaps the most important criteria to use when solving the ‘number of factors’ problem” (O'Rourke & Hatcher, 2013, p. 63). An orthogonal varimax rotation—a robust procedure for correctly identifying factors (Loehlin, 1992)—was applied to the initial factor solution. The rotated factor pattern was then examined where factor loadings were .45 or greater, a “fair” minimum criterion value for analyses in which most factor loadings are 0.63 or greater (Comrey, 1992, p. 243). The .45 criterion held for the current analysis, where the mean factor loading was .69. As a check on the factors identified by the varimax rotation, a promax oblique rotation—allowing correlations among the underlying factors—was also conducted. The resulting factor structure was essentially similar to that produced by the varimax rotation, with the exception that several items having a .45 or greater factor loading on a varimax factor did not reach a 45

loading on the same factor in the promax rotation. Because the promax factor pattern was mostly consistent with the varimax rotation, the varimax rotation was retained for identification of factors. Following the recommendations of O'Rourke and Hatcher (2013) relating to interpretability of a factor, and Comrey's (1992) suggestion to keep all factors of potential importance, 20 factors were identified and kept, and each was given a name to express its content. The factors, items, and factor loadings after rotation are shown in Table 4.2.

Together, the 20 factors accounted for 60% of the variation in the original set of items, well above the minimum recommended criterion of 40% to 50% suggested by Gorsuch (1983) for self-reported data. All but three of the factors contained three or more items; the three exceptions had two items each. For each factor, a factor-based scale (O'Rourke & Hatcher, 2013) was derived by calculating the mean of the items having a rotated factor pattern loading of .45 or greater on that factor. To assess the reliability of the scales, Cronbach Coefficient Alpha reliability coefficients (Cronbach, 1951) were calculated (Table 4.2). All but one of the factors exhibited a minimum acceptable reliability of at least .70 (Nunnally, 1978). Though the reliability for the two-item "Institutional Commitment" factor was only .64, it was retained given that Alpha is a lower-bound estimate of actual reliability (Bollen, 1989; Multon & Coleman, 2010), Alpha is appropriate for use with factors having as few as two items (Bollen, 1989), values of Alpha as low as .60 can be acceptable for measuring psychological constructs (Multon & Coleman, 2010), and because a measure of institutional commitment was of critical importance to the study.

Table 4.2

Factor-based Scales, Items, and Item Loadings	Factor loading
Environmental Interactions	
<i>Comfortable Interactions in Class</i> ($\alpha = 0.85$)	
I feel comfortable participating in class	0.64
I feel comfortable asking an instructor for help if I do not understand course-related material	0.73
I feel comfortable asking another student for help if I do not understand course-related material	0.47
I feel comfortable discussing personal issues that could impact my academic success with my instructors	0.73
I feel comfortable interacting with instructors of the same racial/ethnic background as my own	0.70
I feel comfortable interacting with instructors of different racial/ethnic backgrounds from my own	0.74
<i>Comfort and Support in Major</i> ($\alpha = 0.91$)	
I feel supported by instructors in my major	0.69
I feel comfortable participating in classes in my major	0.58
I feel comfortable asking instructors in my major for help if I do not understand course-related material	0.58
I feel comfortable asking other students in my major for help if I do not understand course-related material	0.52
Instructors in my major encourage me to pursue or continue in my major	0.78
Instructors in my major have mentored me about how to succeed in my major	0.81
Instructors in my major inform me about opportunities for work or research opportunities	0.72
I feel comfortable discussing career plans with instructors in my major	0.79
<i>Treated with Respect</i> ($\alpha = 0.77$)	
In my classes, I am treated with respect by other students	0.46
I have been treated with respect by other residents	0.47
I have been treated with respect by resident advisors (RAs)	0.71
I feel comfortable living around students from different racial/ethnic backgrounds	0.46
<i>Peer Interactions—Own Racial/Ethnic Group</i> ($\alpha = 0.93$)	
Worked on a class project/assignment	0.63
Studied informally	0.73
Shared a meal	0.88
Spent free time together (i.e., hang out)	0.89
Went out socially	0.89
Attended campus activities	0.86
Had intellectual discussions outside of class	0.84
Shared personal feelings and problems	0.81
Had meaningful discussions about race relations outside of class	0.58

Table 4.2 (cont'd)

Factor-based Scales, Items, and Item Loadings	Factor loading
<i>Peer Interactions—Other Racial/Ethnic Group</i> ($\alpha = 0.92$)	
Worked on a class project/assignment	0.52
Studied informally	0.72
Shared a meal	0.82
Spent free time together (i.e., hang out)	0.86
Went out socially	0.87
Attended campus activities	0.81
Had intellectual discussions outside of class	0.78
Shared personal feelings and problems	0.82
Had meaningful discussions about race relations outside of class	0.67
<i>Opportunities for Diversity Interactions</i> ($\alpha = 0.90$)	
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in my living environment	0.66
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in the classroom	0.73
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in clubs and organizations	0.77
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in campus activities	0.81
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in informal social activities	0.77
<i>Racial/Ethnic Group Learning/Identity</i> ($\alpha = 0.76$)	
It is important for me to interact with students from different racial/ethnic backgrounds	0.50
Since coming to college, I have learned a great deal about my own racial/ethnic group	0.81
Since coming to college, I have learned a great deal about other racial/ethnic groups	0.67
I have gained a greater commitment to my racial/ethnic identity since coming to college	0.78
<i>Observed Racism in Class and Major</i> ($\alpha = 0.92$)	
I have observed instructors in my major directing discriminatory words, behaviors, or gestures at students of color in my class	0.83
I have observed students in my major directing discriminatory words, behaviors, or gestures at students of color in my class	0.84
I have encountered racial/ethnic stereotypes about my academic ability from instructors in my major	0.77
I have observed instructors directing discriminatory words, behaviors, or gestures at students of color in my class	0.83
I have observed students directing discriminatory words, behaviors, or gestures at students of color in my class	0.77
I have encountered racial/ethnic stereotypes about my academic ability from my instructors	0.81
I have felt unwelcomed by classmates on course project assignments because of my race/ethnicity	0.75
<i>Observed Racism in Living Environment</i> ($\alpha = 0.81$)	
I have observed residents directing discriminatory words, behaviors, or gestures at students of color	0.77
I have observed resident advisors (RAs) directing discriminatory words, behaviors, or gestures at students of color	0.62
I have encountered racial/ethnic stereotypes where I live	0.67
I have felt unwelcomed where I live because of my race/ethnicity	0.61

Table 4.2 (cont'd)

Factor-based Scales, Items, and Item Loadings	Factor loading
<i>Institutional Diversity Commitment</i> ($\alpha = 0.88$)	
The University is committed to having a racially and ethnically diverse student body	0.73
The University is committed to having a racially and ethnically diverse faculty	0.81
The University is committed to having a racially and ethnically diverse staff/administration	0.82
The University provides opportunities to develop an understanding and appreciation of human diversity	0.55
The University provides opportunities for interaction among students from different racial/ethnic backgrounds	0.55
<i>University's Procedures for Racial/ethnic Bias</i> ($\alpha = 0.80$)	
The University's procedures for dealing with racial/ethnic bias on campus are visible	0.63
The University's procedures for dealing with racial/ethnic bias on campus are effective	0.62
Psychological Outcomes	
<i>Campus Environment Perceptions and Feelings</i> ($\alpha = 0.93$)	
Describe the campus environment—Friendliness	0.76
Describe the campus environment—Respect	0.80
Describe the campus environment—Sensitivity	0.74
Describe the campus environment—Support	0.72
Describe the campus environment—Integrated	0.54
Describe generally how you feel on campus—Comfortable	0.68
Describe generally how you feel on campus—Safe	0.52
Describe generally how you feel on campus—Connected	0.65
Describe generally how you feel on campus—Encouraged	0.70
Describe generally how you feel on campus—Welcomed	0.73
<i>Living Environment Perceptions</i> ($\alpha = 0.81$)	
How you feel in your living environment—Comfortable	0.65
How you feel in your living environment—Safe	0.69
How you feel in your living environment—Respected	0.63
<i>Academic Demands Stress</i> ($\alpha = 0.82$)	
Attending class regularly	0.47
Academic demands of coursework	0.74
Grades/GPA	0.67
Time management	0.77
General study skills	0.73
Sleep issues	0.51

Table 4.2 (cont'd)

Factor-based Scales, Items, and Item Loadings	Factor loading
<i>Academic Environment Stress</i> ($\alpha = 0.86$)	
Negative classroom environment	0.53
Poor relations with instructors	0.63
Making connections with instructors	0.63
In a major I do not like	0.58
Difficulty getting the help/advice I need in my school/college	0.69
Lacking connection to my school/college	0.64
Planning for life after graduation	0.56
<i>Social Connections Stress</i> ($\alpha = 0.89$)	
Difficulty making friends on campus	0.74
Difficulty feeling socially accepted on campus	0.77
Difficulty feeling culturally accepted on campus	0.71
Difficulty integrating with university life/activities	0.79
Racial/ethnic separation on campus	0.59
<i>Financial Stress</i> ($\alpha = 0.90$)	
Maintaining my GPA to keep scholarship awards	0.46
Debt load	0.81
Finances to pay for tuition	0.87
Finances to pay for expenses associated with my major	0.81
Finances to pay for other expenses while at SU	0.85
Finances to pay for travel between home and SU	0.76
Finding a job after graduation	0.58
My family's financial situation	0.66
<i>Family Stress</i> ($\alpha = 0.76$)	
Caring for children	0.48
Lacking support from my family	0.68
Family issues or problems	0.67
Being the first in my family to go to college	0.55
Pressure from my family about my major/academics	0.45
<i>Diet and Exercise Stress</i> ($\alpha = 0.76$)	
Lack of exercise	0.68
Proper nutrition/diet	0.74
<i>Institutional Commitment</i> ($\alpha = 0.64$)	
Ever think of leaving the institution	0.54
If you could start over, would choose the same institution	0.64

Factor-based Scales

The 20 scales resulting from the exploratory factor analysis captured participants' experiences and interactions across a range of campus contexts, and also provided measures of psychological outcomes—i.e., students' perceptions and feelings regarding the campus and living environments, and the sources and amounts of stress they experienced as students. A

measure of institutional commitment was also yielded by the factor analysis. Means and standard deviations for all scales, and response options and values for constituent items, are organized by the theoretical factors of the model and presented in Table 4.3.

Table 4.3

Scale Measures from Factor Analysis				
Variable	Possible values	Mean	SD	
<i>Environmental Interactions</i>				
Comfortable Interactions in Class	1 = Never to 5 = Very often	3.77	0.77	
Comfort and Support in Major	1 = Never to 5 = Very often	3.83	0.83	
Peer Interactions—Own Racial/Ethnic Group	1 = Never to 5 = Very often	3.70	0.97	
Peer Interactions—Other Racial/Ethnic Group	1 = Never to 5 = Very often	3.48	0.97	
Opportunities for Diversity Interactions	1 = Strongly disagree to 5 = Strongly agree	4.01	0.77	
Racial/Ethnic Group Learning/Identity	1 = Strongly disagree to 5 = Strongly agree	3.53	0.80	
Observed Racism in Class and Major	1 = Never to 5 = Very often	1.58	0.82	
Observed Racism in Living Environment	1 = Never to 5 = Very often	1.83	0.87	
Intutitional Diversity Commitment	1 = Strongly disagree to 5 = Strongly agree	3.70	0.85	
University's Procedures for Racial/ethnic Bias	1 = Strongly disagree to 5 = Strongly agree	3.18	0.92	
Treated with Respect	1 = Never to 5 = Very often	4.32	0.59	
<i>Psychological Outcomes</i>				
Living Environment Feelings	1 = Negative perception to 5 = Positive perception	4.27	0.83	
Campus Environment Perceptions and Feelings	1 = Negative perception to 5 = Positive perception	4.00	0.74	
Academic Demands Stress	1 = No stress to 4 = Severe stress	2.65	0.67	
Academic Environment Stress	1 = No stress to 4 = Severe stress	1.98	0.71	
Social Connections Stress	1 = No stress to 4 = Severe stress	1.78	0.78	
Financial Stress	1 = No stress to 4 = Severe stress	2.63	0.88	
Family Stress	1 = No stress to 4 = Severe stress	1.85	0.72	
Diet and Exercise Stress	1 = No stress to 4 = Severe stress	2.25	0.92	
<i>Attitudes</i>				
Institutional Commitment	1 = No to 2 = Yes	1.62	0.34	
<i>Intention</i>				
Intent to Return	0 = No to 2 = Yes	1.86	0.48	

Environmental Interactions

Environmental interactions are central to the Bean and Eaton (2000, 2001/2002) framework; they are impacted by students' entry characteristics and in turn, they lead to psychological outcomes and influence students' attitudes towards the institution. As a result of the EFA, eleven scales were created that measured the extent of students' interactions in various

academic, social, and living environments, their experiences related to diversity, and their encounters with race-related discrimination (Table 4.3).

Two scales captured students' perceived level of comfort and support in academic settings. The *Comfortable Interactions in Class* scale consisted of items gauging the extent of students' comfortable in-class interactions with instructors and students, including comfortable interactions with same- and different-race individuals. The scale mean of 3.77 indicated a near-*often* degree of comfortable interactions. *Comfort and Support in Major* primarily captured the degree to which students felt supported by instructors in their majors including mentoring, work or research opportunities, and career plans. The scale also measured the extent of students' comfort in interacting with instructors and peers within the context of the students' majors. The scale mean was 3.83, a near-*often* level of comfort. An additional scale—*Treated with Respect*—captures the extent to which students feel that they are treated with respect by students in class and by peers and advisors in residence halls, and the extent to which students feel comfortable around students of different racial/ethnic backgrounds. The mean for this scale was 4.32, indicating that students felt *often* to *very often* that they were treated with respect.

The degree to which a student interacted with peers of the *same* racial/ethnic identity, interacted with peers of a *different* racial/ethnic identity, and agreed that there were opportunities for diversity interactions were measured by three respective scales--*Peer Interactions—Own Racial/Ethnic Group*, *Peer Interactions—Other Racial/Ethnic Group*, and *Opportunities for Diversity Interactions*. The items comprising each scale encompassed a variety of interaction contexts and settings. The mean scale score for *Peer Interactions—Own Racial/Ethnic Group* was 3.70—a near-*often* amount of interaction, while the mean score for *Peer Interactions—Other Racial/Ethnic Group* was 3.48—a somewhat lower level of interaction and closer to *sometimes*

than *often* on the underlying five-point response scale. The mean scale score for *Opportunities for Diversity Interactions* was 4.01, indicating that on average, students *agreed* that they had opportunities for diversity interactions. A fourth scale, *Racial/Ethnic Group Learning/Identity*, captured students' level of agreement that in college, they had learned about their own, and other, racial/ethnic groups and had gained greater commitment to their racial/ethnic identity. The mean response to this scale was 3.58, closer to *agree* than *neither agree nor disagree*.

Students' experiences with race-related discrimination on campus were captured via two scale—*Observed Racism in Class and Major*, and *Observed Racism in Living Environment*. The constituent items for these scales asked students to report the respective extents to which they observed and experienced race-related discrimination in academic (i.e., class and major) settings and—as first-year students are required to live on campus, with few exceptions—in their residence hall. The *Observed Racism in Class and Major* scale mean was 1.58, indicating experiences—albeit less than *rarely*—of discrimination in campus academic realms. The mean score for *Observed Racism in Living Environment* was 1.83, indicating that students rarely—but not *never*—experienced race-related discrimination in their residence halls. Students' level of agreement that the university is committed to student, faculty and staff diversity, and that it responds to racial/ethnic bias on campus, were assessed by two respective scales—*Institutional Diversity Commitment* and *University's Procedures for Racial/ethnic Bias*. The mean score on the *Institutional Diversity Commitment* scale was 3.70, close to but not equal to agreement that the institution is committed to diversity. For the *University's Procedures for Racial/ethnic Bias* scale, the mean of 3.18 indicated that on average, students neither disagreed nor agreed that the university's procedures for dealing with bias were visible and effective.

Psychological Outcomes

In the present study, psychological outcomes characterize how students feel—based on their experiences at institution, and also in terms of how much stress—from various sources—they suffer. The EFA yielded eight factors measuring psychological outcomes. Two scales captured students' feelings in regard to their perceptions of the institutional environment, while six scales each measured stress resulting from a particular cause or context.

Students' feelings towards the institution's living environment and campus environment were gauged by the respective scales *Living Environment Perceptions* and *Campus Environment Perceptions and Feelings*. The *Living Environment Perceptions* scale was constructed of items asking students if they felt comfortable, safe, connected, respected, and integrated in their living environment. The scale mean was 4.27, towards the positive end of the scale. *Campus Environment Perceptions and Feelings* assessed the degree to which students perceived the campus environment as friendly, respectful, sensitive, supportive, and integrated as well as the extent to which they felt comfortable, safe, connected, encouraged, and welcomed on campus. The scale mean was 4.00, greater than a middling rating but short of the most positive rating.

Six factors captured students' experiences of stress with respect to academic demands, the academic environment, social connections, finances, family, and diet and exercise. Sources of *academic demands stress* included time management, coursework, study skills, and grades and GPA. Issues with sleep and attending classes regularly also contributed stress. The scale mean of 2.65 indicates that on average, student felt between mild and moderate levels of academic demands stress. In contrast to academic demands stress—which relates mainly to meeting academic schedules and accomplishing coursework—*academic environment stress* was rooted in a lack of both academic support and connectedness with the school/college and faculty.

It also captured dislike of majors, a poor classroom environment, and concerns about planning for life after graduation. With a mean of 1.98, students tended to feel a mild amount of academic stress. *Social connections stress* reflected students' challenges in integrating with university life and making friends, and feeling socially and culturally accepted on campus. The stress of feeling racial/ethnic separation on campus was also part of the scale. The mean of 1.78 indicated that students felt mildly stressed by social connections difficulties. *Financial stress* was mostly about meeting the costs of college including tuition, major-related expenses, travel to and from home, other expenses, and debt load. Family financial situation, finding a job after graduation, and maintaining GPA to keep scholarships also contributed to the factor. Students felt between mild and moderate financial stress; the mean was 2.63. Contributing to *family stress* were families that were unsupportive, had problems, or pressured students about their grades. Being the first in family to attend college, or having to provide childcare, were also sources of stress. The mean of 1.85 indicates that students felt a mild degree of family stress. *Diet and exercise stress* arose from lack of exercise, and poor nutrition and diet. With a mean of 2.25, students felt a somewhat more than mild degree of diet and exercise stress.

Attitudes

In the Bean and Eaton (2000, 2001/2002) framework, a student's attitude towards the institution—specifically, level of attachment to the institution—is a predictor of intent to persist. In the present study, attachment to the institution is captured by the *Institutional Commitment* scale. *Institutional Commitment* reflects students' sentiments in regard to leaving the institution, and attending the same institution if given the choice again. The scale mean was 1.62, indicating—on average—a moderate level of institutional commitment among participants.

Intention

Though the measure of intention employed in the present study was not a product of the EFA, results for it are placed in this section, given that the model specifies it as a product of attitudes, and—indirectly—environmental interactions and psychological outcomes. Students' intentions to return to the institution for the subsequent fall semester were measured via a single item, with responses ranging from zero (No) to 2 (Yes). The mean of 1.86 indicates that most students intended to return for the fall of their second year.

Research Question 1

Is there evidence that the survey items constitute latent constructs (i.e., factors) for FG students? Will the exploratory factor analysis show that individual survey items are arrangeable into a smaller number of groups of items, with each group of items representing a latent construct?

The evidence supports a conclusion of “yes” and “yes” for research question one. This question was addressed through application of an EFA to select SUSES instrument items. The KMO Test of Sampling Adequacy (Kaiser, 1970), and Bartlett's Test of Sphericity (Bartlett, 1950), established the suitability of the item correlation matrix for conducting an EFA. An EFA was conducted, accounting for 60% of survey item variation—well above the minimum criterion of 40% to 50% recommended by Gorsuch (1983). Additionally, a simple structure—with each item loading primarily on one factor—was observed, providing evidence of the distinctiveness of each construct. Furthermore, all but one of the factors displayed at least adequate reliability. Finally, each factor related meaningfully to a section of the Bean and Eaton (2000, 2001/2002) framework, enabling analysis of the framework in terms of the factors.

Path Analysis

Path analytic models were employed to ascertain associations among predictor variables, and their relationship to outcomes. The PROC CALIS[®] procedure, part of SAS/STAT[®] software, was suitable for accomplishing the analysis (Narayanan, 2012; O'Rourke & Hatcher, 2013). It was used to fit the models and provide indices of model fit, estimate direct and indirect paths, and obtain modification indices to guide model trimming and specification. Given that path analysis assumes a multivariate normal distribution of data for estimation of model parameters (Bollen, 1989; Loehlin, 1992), standard errors, and model fit, statistical tests of normality were conducted. The null hypothesis of normality was rejected for the persistence outcome measures, academic progress variables, and several other variables that would potentially serve as intermediary outcomes. Tests of multivariate normality with respect to skewness and kurtosis were also rejected. Because the data were not multivariate normal, weighted least squares was utilized for model estimation (Bollen 1989; SAS Institute Inc., 2013).

Separate path models were run to model each of the three persistence outcomes—retention to the third year, and graduation within four and six years. For the retention model, relationships among 39 potential predictor variables—and their impact on retention—were explored. For the two graduation models, addition of the third-year academic progress variable brought the total number of potential predictors to 40. The initial, saturated model for each outcome was trimmed through an iterative process of adding restrictions to (i.e., eliminating paths from) the model (Bollen, 1989). Following guidance from Bollen (1989) and Loehlin (1992), non-significant paths ($p > .05$) were removed from the model. Individual path coefficients with an absolute value of less than .10 were also deleted. Modification indices guided addition of indirect paths, as well as paths connecting distant variables (i.e., variables not

adjacent to each other), within the theoretically-specified sections of the model (Bollen, 1989; Loehlin, 1992). For inclusion in the model, newly added paths were required to meet the significance ($p > .05$) and absolute-value (.10) criteria. Following recommendations from Bollen (1989) and Loehlin (1992) about the role of theory when fitting empirical path models, a necessity of all paths in the models was that they were consistent with the direction and flow of the theoretical framework. R-squared, chi-square, and selected goodness-of-fit indices for the final models are shown in Table 4.4. While the r-squared calculated under WLS estimation with a categorical outcome is not interpretable as the proportion of variation explained as it is with ordinary linear regression and a continuous outcome, it does constitute an approximation that is best interpreted in concert with other indices of model fit (Willett & Singer, 1988). The chi-square—which rejects the null hypothesis of a good-fitting model—is provided as a matter of convention; in contemporary thought and practice, this measure is “no longer seen as a viable goodness-of-fit statistic” (O'Rourke & Hatcher, 2013, p. 144).

Table 4.4
Goodness-of-fit Indices for Three Models

Model	R ²	χ^2	df.	p	CFI	SRMR	RMSEA	RMSEA 90% UCL
Retention to the third year	.4230	259.0765	91	<.0001	.9322	.0598	.0630	.0727
Graduation within four years	.4018	413.4869	134	<.0001	.9446	.0653	.0675	.0749
Graduation within six years	.3847	421.6216	133	<.0001	.9445	.0701	.0688	.0763

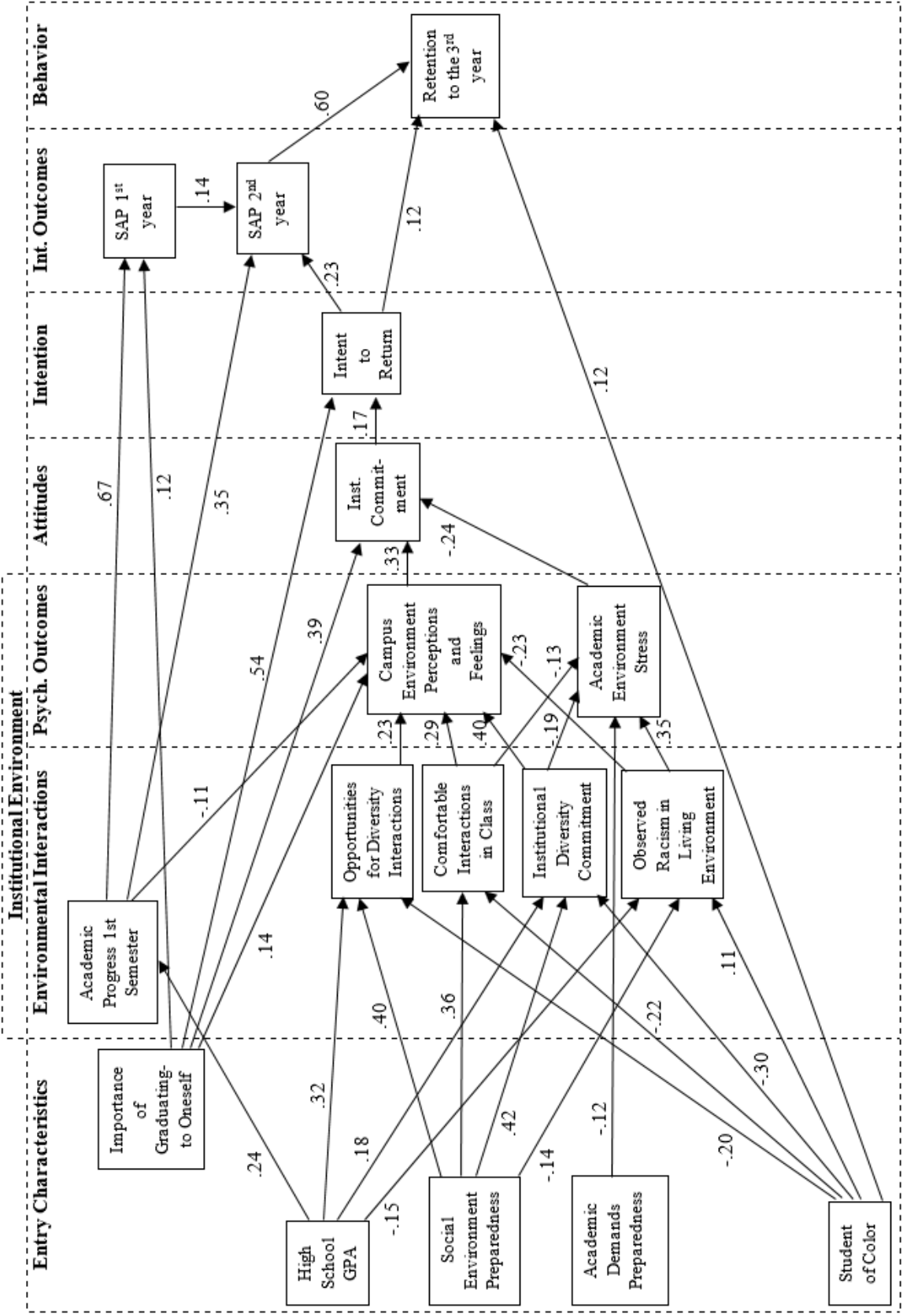
CFI, Comparative fit index; SRMR, Standardized root mean square residual; RMSEA, Root mean square error of approximation; RMSEA 90% UCL, RMSEA 90% upper confidence limit.

Retention to the Third Year

The final model for retention to the third year (see Figure 4.1) produced an r-square value of .42. The CFI, .932, indicates a level of fit between the data and the hypothesized model that is slightly below an ideal fit (i.e., .94 or higher). The observed SRMR value, .060, indicates good, but not quite close, fit. The RMSEA of the fitted model was .063, indicating a greater-than-adequate fit, with a moderately low error of approximation. The RMSEA 90% upper confidence

limit of .073 also indicates that the data fit the model fairly well. With the SRMR and RMSEA indicating an average error of approximation near .06—well under the maximum recommended value of .09—and the CFI showing near-ideal fit, it was concluded that the final model adequately explained retention to the third year.

Figure 4.1
Final Model for Retention to the Third Year*



* All path coefficients in the model are significant at the $p < .01$ level.

Significant Model Effects. The final model for retention to the third year contained a total of 35 direct, and 57 indirect, significant effects across the exogenous and endogenous variables of the model. The coefficient estimates for all direct paths are shown in Table 4.5. Retention to the third year was impacted by three direct significant effects and 15 indirect significant effects (see Table 4.6). A total of 16 variables contributed to the model, having either a direct or indirect relationship to retention to the third year.

Table 4.5

Parameter Estimates for Retention to the Third year, and Graduation within Four and Six Years

Outcome	Predictor	Retention to the third year	Graduation within four years	Graduation within six years
Academic Progress 1st Semester	Parental Educational Attainment		.14	.13
	High School GPA	.24	.23	.24
	Financial Need		-.11	
Comfortable Interactions in Class	Parental Educational Attainment		.15	.13
	Student of Color	-.22	-.14	-.15
	High School GPA			.12
	Social Environment Preparedness	.36	.36	.27
	Importance of Graduating- to Oneself			.15
Peer Interactions—Other Racial/Ethnic Group	Social Environment Preparedness		.38	.34
	Financial Need		-.11	-.17
Opportunities for Diversity Interactions	Student of Color	-.20	-.13	-.16
	High School GPA	.32	.26	.27
	Social Environment Preparedness	.40	.44	.41
	Importance of Graduating- to Oneself		.15	.23
Institutional Diversity Commitment	Student of Color	-.30	-.25	-.26
	High School GPA	.18	.21	.22
	Social Environment Preparedness	.42	.44	.38
	Importance of Graduating- to Oneself		.13	.20
Observed Racism in Class and Major	High School GPA		-.14	-.11
Observed Racism in Living Environment	Student of Color	.11**		
	High School GPA	-.15		
	Social Environment Preparedness	-.14		
Campus Environment Perceptions and Feelings	Social Environment Preparedness		.14	.13
	Importance of Graduating- to Oneself	.14	.13	.11
	Academic Progress 1st Semester	-.11		
	Comfortable Interactions in Class	.29	.26	.27
	Opportunities for Diversity Interactions	.23	.15	.14
	Institutional Diversity Commitment	.40	.35	.35
	Observed Racism in Class and Major		-.19	-.15
	Observed Racism in Living Environment	-.23		

Table 4.5 (cont'd)

Parameter Estimates for Retention to the Third year, and Graduation within Four and Six Years

Outcome	Predictor	Retention to the third year	Graduation within four years	Graduation within six years
Academic Environment Stress	Academic Demands Preparedness	-.12**		
	Comfortable Interactions in Class	-.13		
	Institutional Diversity Commitment	-.19		
	Observed Racism in Living Environment	.35		
Family Stress	Parental Educational Attainment		-.17	
	Social Environment Preparedness		-.19	-.18
	Comfortable Interactions in Class			-.15
	Peer Interactions—Other Racial/Ethnic Group		.18	.20
	Opportunities for Diversity Interactions		-.19	-.22
	Observed Racism in Class and Major		.17	.18
Institutional Commitment	Importance of Graduating- to Oneself	.39	.37	.34
	Campus Environment Perceptions and Feelin	.33	.41	.41
	Academic Environment Stress	-.24		
	Family Stress		-.15	-.12
Intent to Return	Importance of Graduating- to Oneself	.54	.55	.52
	Institutional Commitment	.17	.22	.23
Academic Progress 1st Year	Importance of Graduating- to Oneself	.12		
	Academic Progress 1st Semester	.67	.79	.72
	Intent to Return		.20	.24
Academic Progress 2nd Year	Intent to Return	.23	.20	.30
	Academic Progress 1st Semester	.35		.14*
	Academic Progress 1st Year	.14**	.52	.36
Academic Progress 3rd Year	Academic Progress 2nd Year		.85	.84
Retention to the third year	Student of Color	.12		
	Intent to Return	.12**		
	Academic Progress 2nd Year	.60		
Graduation within four years	Family Stress		-.17	
	Academic Progress 2nd Year		.46	
	Academic Progress 3rd Year		.16*	
Graduation within six years	Academic Progress 2nd Year			.33
	Academic Progress 3rd Year			.32

Note: All $p < .001$, excepting ** ($p < .01$) and * ($p < .05$).

Direct Effects. Three variables had a direct impact on retention to the third year. For FG students, academic progress in the first year ($\beta = .605$) had a large and positive impact on retention, with an effect substantially exceeding each of the other paths—direct or indirect—in the model. First-year students who maintained a cumulative GPA of at least 2.0, and earned 24 or more credits, were much more likely to persist to the third year. Students of color were more likely to persist ($\beta = .121$), the only exogenous factor having a direct effect. Intent to return for the second year was positively related to persistence ($\beta = .123$) (see Table 4.6).

Indirect Effects. A total of 15 variables had a significant indirect effect on retention to the third year including five entry characteristics, five environmental interaction variables including SAP after the first semester, two psychological outcomes, SAP after the first year, attitudes, and intention (see Table 4.6). SAP after the first year ($\beta = .086$) acted through SAP after the second year to positively impact persistence while SAP after the first semester ($\beta = .265$) impacted both SAP after the first year and after the second year to positively impact persistence. Acting through SAP after the second year, intent to return was positively associated with retention ($\beta = .137$). Students with greater institutional commitment were more likely to persist ($\beta = .045$); they tended to have higher intent to return and higher SAP after the second year—each positively related to retention. Campus environment perceptions and feelings positively impacted retention ($\beta = .015$) through institutional commitment, intent to return, and SAP after the second year. Conversely, academic environment stress negatively impacted institutional commitment ($\beta = -.011$) which led to reduced intent to return, SAP after the second year, and retention.

Beyond SAP after the first semester, four environmental interaction measures correlated indirectly with retention. Opportunities for diversity interactions ($\beta = .003$) was positively

associated with persistence through its impact on campus environment perceptions and feelings. Comfortable interactions in class was positively related to retention ($\beta = .006$); it positively impacted campus environment perceptions and feelings and negatively impacted academic environment stress. Institutional diversity commitment was positively related to retention ($\beta = .008$), having a positive impact on campus environment perceptions and feelings while negatively impacting academic environment stress. Observation of racism in the living environment was negatively related to retention ($\beta = -.007$); such observations negatively impacted campus environment perceptions and feelings and positively impacted academic environment stress.

Five entry characteristics were indirectly related to retention (student of color was also directly related to retention). Importance of graduating to oneself positively impacted retention ($\beta = .169$); it positively correlated with campus environment perceptions and feelings, institutional commitment, intent to return, and SAP after the first year—each of which were positively related to persistence. High school GPA was positively associated with retention ($\beta = .068$), having a positive impact on SAP after the first semester, opportunities for diversity interactions, and perceptions of institutional diversity commitment while negatively impacting observation of racism in the living environment. Social environment preparedness had a positive impact on retention ($\beta = .008$); it was positively related to opportunities for diversity interactions, comfortable interactions in class, and perceptions of institutional diversity commitment—and negatively correlated with observation of racism in the living environment. Academic demands preparedness was positively related to retention ($\beta = .001$) through its negative impact on academic environment stress. Students of color were less likely to realize opportunities for diversity interactions and comfortable interactions in class, and less likely to feel that the

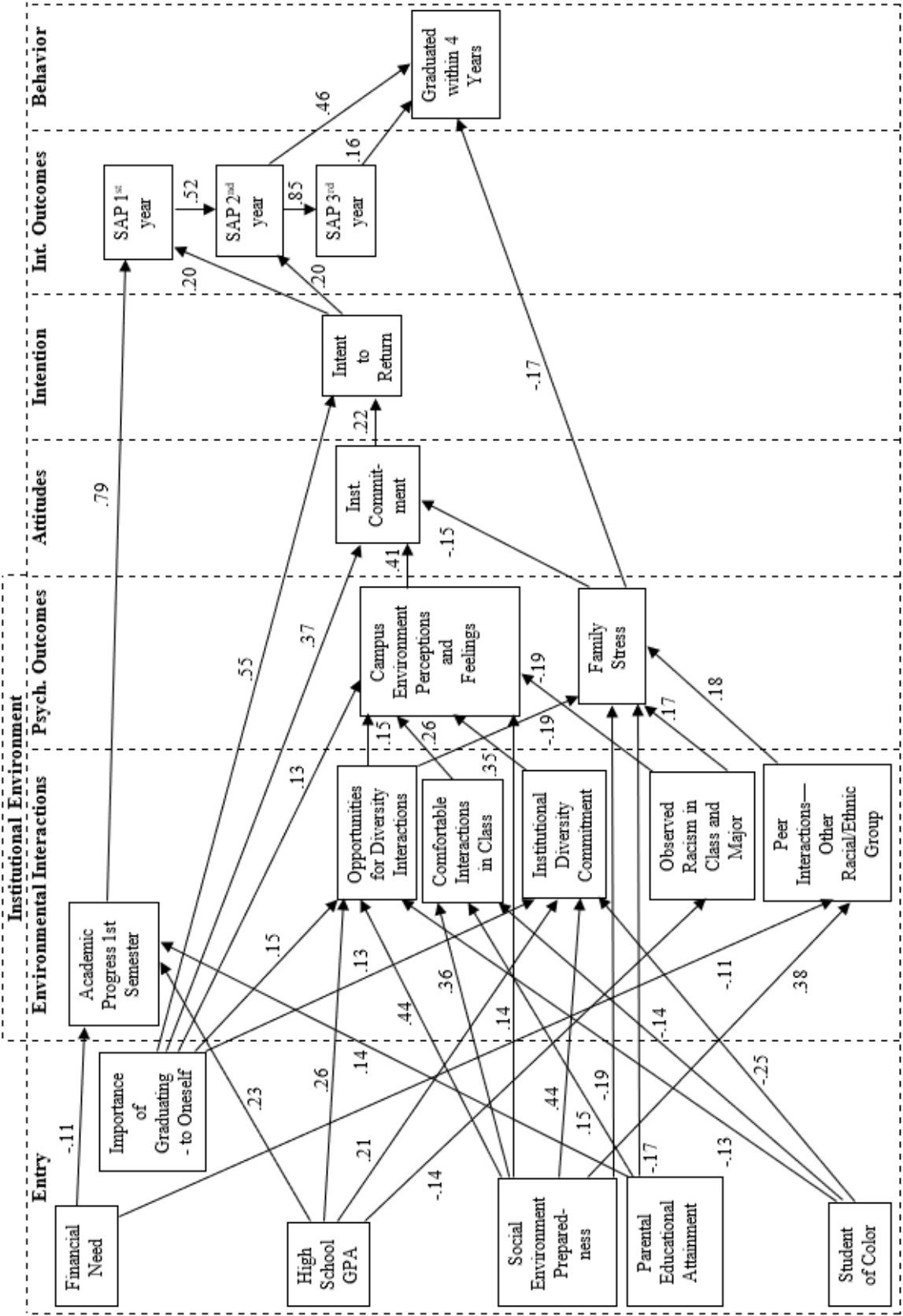
institution was committed to diversity, which indirectly and negatively impacted their persistence ($\beta = -.005$). With its positive direct impact on retention, the net total effect of student of color on retention was positive ($\beta = .116$).

Graduation Within Four and Six Years

While separate models were run for graduation within four years and graduation within six years, results were similar for the two models in terms of significant predictors, as well as their specific direct and indirect impacts on graduation. Therefore, the results for the two graduation models are presented together.

The final model for graduation within four years (see Figure 4.2) produced an r-square value of .40. With a value of .945, the observed CFI suggests a good fit of the model to the data. The fitted-model SRMR value of .065 is well under the suggested maximum value (i.e., .09) for acceptable fit, but falls short of ideal fit (i.e., .055). Similarly, the RMSEA index of .068 indicates more-than-acceptable fit, with a fairly low (but short of ideal) error of approximation. The RMSEA 90% upper confidence limit of .075 also suggests acceptable fit. With the CFI showing a good fit to the data, and the SRMR and RMSEA measures well under the criteria for minimally-acceptable fit, it was concluded that the final model adequately explained graduation within four years.

Figure 4.2
Final Model for Graduation within Four Years*

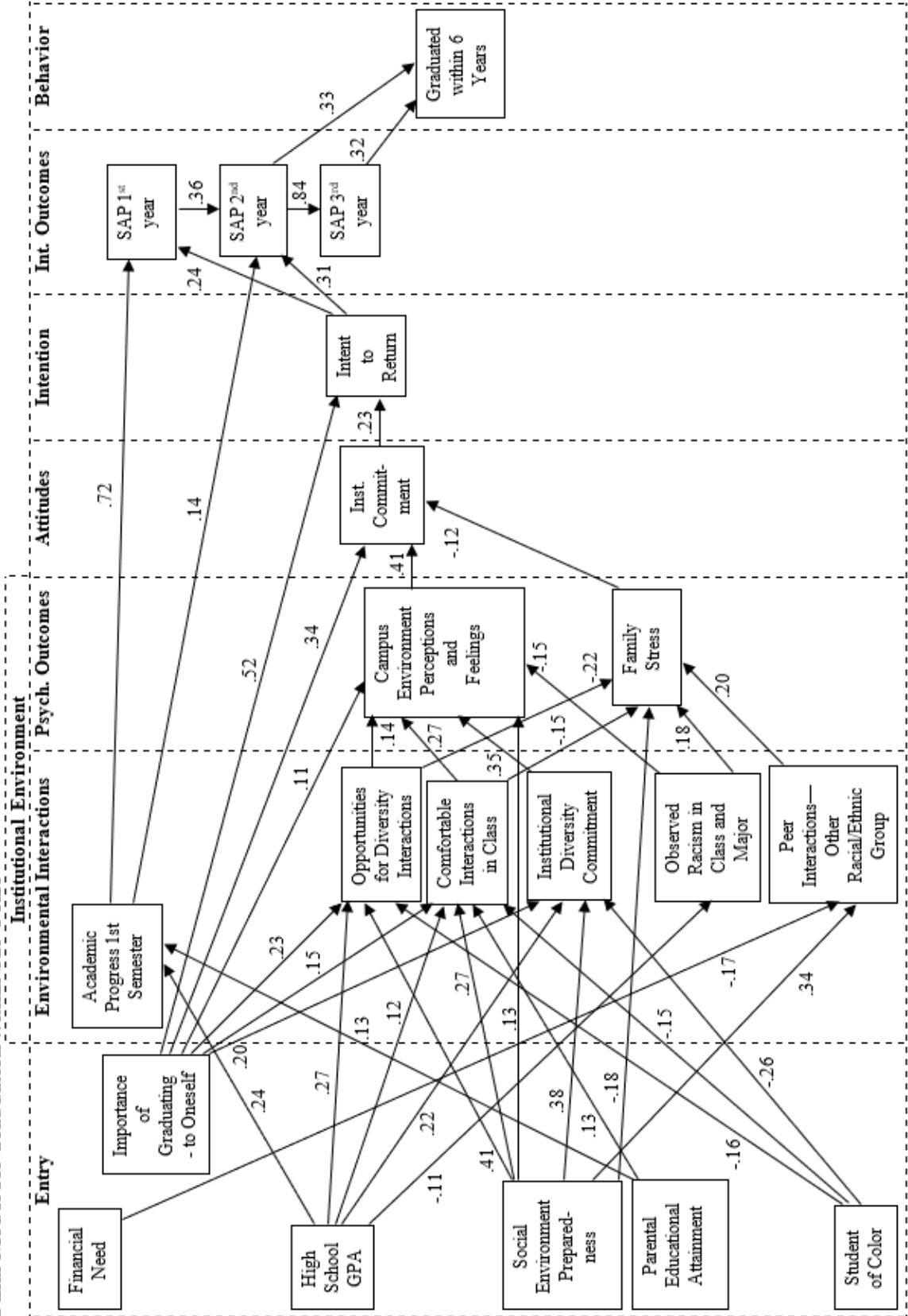


* All path coefficients in the model are significant at the $p < .05$ level.

The final model for graduation within six years (see Figure 4.3) produced an r-square value of .38. The CFI, .945, indicates a good fit of the model to the data. The SRMR of .070 indicates an adequate fit of model to data, with an error of approximation falling between minimally acceptable (i.e., .09) and ideal (i.e., .055). The RMSEA, .069, can be interpreted similarly to the SRMR—better than acceptable fit, but less than ideal fit, with a moderate error of approximation. Similarly, the RMSEA 90% upper confidence limit of .076 indicates an acceptable fit. With a good fit to the data as shown by the CFI, and with SRMR and RMSEA values indicating an acceptably low mean error of approximation, it was concluded that the final model adequately explained graduation within six years.

Figure 4.3

Final Model for Graduation within Six Years*



*All path coefficients in the model are significant at the $p < .05$ level.

Significant Model Effects. Throughout the exogenous and endogenous variables predicting graduation, the final model for graduation within four years contained a total of 41 direct and 99 indirect significant effects, while the final model for graduation in six years contained a total of 42 direct and 100 indirect significant effects. The coefficient estimates for all direct paths, for each graduation model, are shown in Table 4.5. Graduation within four years was impacted by three direct significant effects and 18 indirect significant effects; graduation within six years was impacted by two direct significant effects and 18 indirect significant effects (see Table 4.6). For each of the two graduation models, a total of 19 variables contributed to the outcome—having either a direct or indirect relationship to graduation.

Table 4.6

Direct, Indirect and Total Effects on Retention to the Third Year, and Graduation within Four and Six Years

	Retention to the third year			Graduation within four years			Graduation within six years		
	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect
<i>Entry characteristics</i>									
Parental Educational Attainment	—	—	—	—	.065***	.065***	—	.031***	.031***
Student of Color	.121***	-.005**	.116***	—	-.007***	-.007***	—	-.004***	-.004***
High School GPA	—	.068***	.068***	—	.070***	.070***	—	.061***	.061***
Academic Demands Preparedness	—	.001*	.001*	—	—	—	—	—	—
Social Environment Preparedness	—	.008**	.008**	—	.043***	.043***	—	.010***	.010***
Financial Need	—	—	—	—	-.025***	-.025***	—	.0002*	.0002*
Importance of Graduating- to Oneself	—	.169***	.169***	—	.124***	.124***	—	.145***	.145***
<i>Environmental Interactions</i>									
Academic Progress 1st Semester	—	.265**	.265**	—	.244***	.244***	—	.237***	.237***
Comfortable Interactions in Class	—	.006**	.006**	—	.005***	.005***	—	.007***	.007***
Peer Interactions—Other Racial/Ethnic Group	—	—	—	—	-.031***	-.031***	—	-.001**	-.001**
Opportunities for Diversity Interactions	—	.003**	.003**	—	.036***	.036***	—	.005***	.005***
Institutional Diversity Commitment	—	.008**	.008**	—	.006***	.006***	—	.008***	.008***
Observed Racism in Class and Major	—	—	—	—	-.032***	-.032***	—	-.005***	-.005***
Observed Racism in Living Environment	—	-.007**	-.007**	—	—	—	—	—	—
<i>Psychological Outcomes</i>									
Campus Environment Perceptions and Feelings	—	.015**	.015**	—	.017***	.017***	—	.022***	.022***
Academic Environment Stress	—	-.011**	-.011**	—	—	—	—	—	—
Family Stress	—	—	—	-.0167***	-.006***	-.173***	—	-.006**	-.006**
<i>Attitudes</i>									
Institutional Commitment	—	.045***	.045***	—	.041***	.041***	—	.054***	.054***
<i>Intention</i>									
Intent to Return	.123***	.137***	.260***	—	.184***	.184***	—	.232***	.232***
<i>Persistence Behavior</i>									
Academic Progress 1st Year	—	.086**	.086**	—	.309***	.309***	—	.212***	.212***
Academic Progress 2nd Year	.605***	—	.605***	.462***	.136*	.599***	.326***	.268***	.595***
Academic Progress 3rd Year	—	—	—	.160*	—	.160*	.321***	—	.321***

Direct Effects. Three variables directly impacted graduation within four years, while two variables directly impacted graduation within six years. SAP after the second year directly and positively impacted both graduation within four years ($\beta = .462$) and graduation within six years ($\beta = .326$). SAP after the third year also directly and positively impacted both graduation within four years ($\beta = .160$) and graduation within six years ($\beta = .321$). For the four-year model, family stress had a direct and negative impact on graduation ($\beta = -.167$) (see Table 4.6).

Indirect Effects. In each of the two graduation models, the same 18 variables had an indirect impact on graduation. The 18 predictors included six entry characteristics, six environmental interaction measures including SAP after the first semester, two psychological outcomes, attitudes, and intention as well as SAP after the first, and second, years (see Table 4.6). For both the four- and six-year models, SAP after the second year positively impacted graduation (4-year $\beta = .136$; 6-year $\beta = .268$) through its positive relationship with SAP after the third year. Similarly, for each model, SAP after the first year positively impacted graduation (4-year $\beta = .309$; 6-year $\beta = .212$) through its positive relationship with SAP after the second year. In the four-year model, SAP after the first semester positively impacted graduation ($\beta = .244$) through its relationship with SAP after the first year. In in the six-year model, SAP after the first semester positively impacted graduation ($\beta = .244$) through SAP after the first, and second, years. In both models, intent to return was positively related to graduation (4-year $\beta = .184$; 6-year $\beta = .232$) through SAP after the first, and second, years. Institutional commitment positively impacted graduation in both models (4-year $\beta = .041$; 6-year $\beta = .054$) through its relationship with intent to return. In both models, campus environment perceptions and feelings was positively correlated with graduation (4-year $\beta = .017$; 6-year $\beta = .022$) through its

relationship to institutional commitment. Family stress exhibited a negative impact on graduation (4-year $\beta = -.006$; 6-year $\beta = -.006$) through its negative impact on institutional commitment.

Five environmental interaction variables (excluding SAP after the first semester) were indirectly related to both four- and six-year graduation. In both models, opportunities for diversity interactions positively impacted graduation (4-year $\beta = .036$; 6-year $\beta = .005$) through a positive relationship to campus environment perceptions and feelings, and a negative relationship with family stress. In the four-year model, comfortable interactions in class positively impacted graduation ($\beta = .005$) through its positive relationship with campus environment perceptions and feelings. In the six-year model, comfortable interactions in class positively impacted graduation ($\beta = .007$) through a positive association with campus environment perceptions and feelings and a negative relationship with family stress. Institutional diversity commitment positively impacted graduation in both models (4-year $\beta = .006$; 6-year $\beta = .008$) through its positive association with campus environment perceptions and feelings. In both models, observation of racism in class and major had a negative impact on graduation (4-year $\beta = -.032$; 6-year $\beta = -.005$) through a negative association with campus environment perceptions and feelings and a positive association with family stress. In both models, peer interactions—other racial/ethnic group negatively impacted graduation (4-year $\beta = -.031$; 6-year $\beta = -.001$) by positively correlating with family stress.

In both graduation models, the same six entry characteristics exerted an impact on graduation. In the four-year model, financial need was negatively related to graduation ($\beta = -.025$). Financial need correlated negatively with SAP after the first semester, negatively impacting graduation. Conversely, it also negatively impacted peer interactions—other racial/ethnic group—serving to attenuate family stress, and positively impact graduation.

However, the negative impact of financial need on SAP after the first semester outweighed the indirect, attenuating effect on family stress—resulting in a net negative impact of financial need on graduation. In both models, importance of graduating to oneself positively impacted graduation (4-year $\beta = .124$; 6-year $\beta = .145$) through positive relationships with opportunities for diversity interactions, institutional diversity commitment, campus environment perceptions and feelings, institutional commitment, and intent to return. Additionally, in the six-year model, importance of graduating to oneself positively impacted graduation through a positive association with comfortable interactions in class. High school GPA was positively related to graduation—in both models (4-year $\beta = .070$; 6-year $\beta = .061$)—through positive relationships with SAP after the first semester, opportunities for diversity interactions, and institutional diversity commitment, and a negative impact on observation of racism in class and major. Moreover, in the six-year model, high school GPA was positively associated with comfortable interactions in class.

Social environment preparedness was positively related to graduation in both the four-year and six-year models (4-year $\beta = .043$; 6-year $\beta = .010$); it positively impacted opportunities for diversity interactions, comfortable interactions in class, perceptions of institutional diversity commitment, and campus environment perceptions and feelings while correlating negatively family stress—all with positive impact on graduation. However, in both models, social environment preparedness also correlated positively with peer interactions—other racial/ethnic group, which had the effect of positively impacting family stress and negatively impacting graduation. The net effect of the five positive paths, and one negative path, was a positive overall effect of social environment preparedness on graduation. Parental educational attainment positively impacted graduation (4-year $\beta = .065$; 6-year $\beta = .031$); in both models, it was

positively correlated with SAP after the first semester and comfortable interactions in class. In the four-year model, parental educational attainment was also negatively related to family stress. Student of color was negatively related to graduation (4-year $\beta = -.007$; 6-year $\beta = -.004$) through negative associations with opportunities for diversity interactions, comfortable interactions in class, and perceptions of institutional diversity commitment.

Research Question 2

Is there evidence that the modified Bean and Eaton (2000, 2001/2002) psychological model of college student retention represents the relationships and causal flow among the variables in the model? Does the path analysis representing the model show an adequate fit to the data?

Results showed affirmative evidence for each piece of research question two. As determined by the fit indices, the final empirical model for each of the three outcomes demonstrated at least adequate fit in relation to the constructs, and their interconnections, as proposed by the psychological model. Retention to the third year was directly and positively impacted by academic progress, intent to return, and student of color. Graduation within four and six years were both directly and positively impacted by academic progress; graduation within four years was directly and negatively related to family stress. While intent to return did not directly correlate with graduation outcomes, it impacted graduation indirectly through academic progress.

Chapter Five: Discussion

Given the importance of college completion for individuals and society and the sizable number of FG college students in the future, the objective of this path-analytic study was to explore and identify correlates of FG retention and graduation at a large, residential, selective, private, four-year research university. Despite a voluminous literature on FG persistence, the retention and graduation rates of FG students continue to trail those of CG students across the various sectors of the U.S. higher education system (Cataldi et al., 2018; Choy, 2001; Ishitani, 2006; Lohfink & Paulsen, 2005; Redford & Hoyer, 2017). At private four-year institutions—the sector of the U.S. higher education system with the highest overall retention and graduation rates (Snyder et al., 2019), and from which graduates command the highest salaries and greatest career prospects (Witteveen & Attewell, 2017)—FG persistence rates remain low (DeAngelo et al., 2010; Snyder et al., 2019). Relatively little research has employed a theoretical retention model to focus on FG student characteristics and campus experiences, and how these factors relate to persistence, at private, four-year, prestigious, residential institutions.

Defining FG students as those whose parents had not earned a bachelor's degree, this study referenced the Bean and Eaton (2000, 2001/2002) psychological framework to model actual retention and graduation. To test the model empirically, data were collected on FG students' entry characteristics, academic, social, and race-related interactions, psychological outcomes and attitudes, and persistence intentions and outcomes. The student experiential and psychological factors specified by the Bean and Eaton model align with factors employed in this study including campus and climate-related interactions and psychological outcomes, in classroom, living, and other social environments. This operationalization of the model served to test it through an exploration of FG persistence.

Summary of Findings

This study focused on first-time, full-time, baccalaureate-seeking FG students matriculating in fall 2009, tracking their persistence for six years through the summer of 2015. Institutional records provided demographic, academic, and retention and graduation data, while a student experience survey—administered in spring 2010—captured students’ experiences, interactions, psychological outcomes, institutional commitment, and intent to persist. While the survey data were collected only once—towards the end of the first year—the institutional information enabled a longitudinal analysis of students’ satisfactory academic progress at regular intervals as well as retention to the third year and graduation after four and six years. The combination of survey and institutional data yielded a rich dataset enabling both an exploration of the correlates of persistence, and a test of the Bean and Eaton (2000, 2001/2002) framework for structuring and explaining the observed relationships of the variables.

This chapter provides a discussion and interpretation of the study’s results. The research questions are addressed by reviewing the EFA, and the retention and graduation models, in the context of existing research and as novel findings that extend scholarship. Implications for supporting FG student persistence are presented. Limitations of the study are also reviewed. Finally, suggestions for future research are posed. The study’s results—conveyed in full in in chapter 4—are not restated here.

Research Question 1

Research question one hypothesized that responses to individual survey items represented unobservable latent constructs. An exploratory factor analysis revealed twenty factors that delineate how students’ perceptions of their interactions, experiences, and feelings are organized topically and thematically (e.g., comfort; stress) and by location and context (e.g., classroom;

living environment). While many of the factors were generally consistent with constructs previously identified in the FG literature, the subject matter of several factors was subtly distinct from the findings of previous research. By yielding twenty factors representative of the much larger set of survey items, the EFA also accomplished data reduction (Bollen, 1989)—making analysis of the survey data more practical than it otherwise would have been.

This section details and interprets the factors, organized according to the segments of the model utilized in this study. Interpretation of each factor was aided by inspecting its item factor loadings to reveal which items most strongly associated with the factor. Each of the factors became candidates for inclusion in the retention and graduation path models developed and tested in research question two. As such, the factors are interpreted and discussed largely within the context of research on student persistence, with an emphasis on FG persistence where literature exists to support a discussion.

Experiences and Interactions

Two factors captured students' interactions in their classes and major. *Comfortable Interactions in Class* primarily captured the degree of comfort students felt with engaging instructors for academic support and approaching instructors of the same or different racial/ethnic backgrounds as themselves. It also captured students' comfort with participating in class and asking peers for help. *Comfort and Support in Major* principally measured students' feelings that instructors in their major were supportive and encouraging, mentored them, and discussed career plans with them. Comfort with participating in classes in the major, and with asking other students for help in the major, played a lesser role in the factor.

In literature on college outcomes, student comfort in academic contexts is a recurring theme. Previous studies have identified reliable measures of students' academic interactions and

found them to correlate with academic outcomes (Johnson et al., 2007, 2014; Pascarella and Terenzini, 1980; Terenzini et al., 1981). Support and comfort in academic interactions with faculty and peers is positively connected with FG students' college adjustment, engagement, feelings of belongingness, and academic success (McMurray & Sorrells, 2009; Ramos-Sanchez & Nichols, 2007; Rendón, 1994), and students' experiences in their major correlate with both their demographic characteristics and with their ambitions for post-baccalaureate study (Brint et al., 2008). For FG students at a prestigious institution, the college academic environment may present particularly novel experiences. As a consequence, their degree of comfort in the classroom and in their majors may have a significant bearing on persistence.

The *Treated with Respect* factor captured students' perceptions that they were treated with respect by resident advisors, residence hall peers, and by other students in class. It bears similarity to previously identified measures of perceived respect (Soria et al., 2013-14), and being respected individually and in interpersonal interactions in college has been found important to FG students (Bui, 2002; Carpenter & Peña, 2017). In Johnson et al. (2014), items gauging student's perceptions of respect loaded on a factor capturing perceptions of the campus racial climate. In contrast, this study identified respect as a standalone factor, indicating its importance to FG students as a potentially unique predictor of persistence.

Two factors captured peer interactions relating to race/ethnicity. *Peer Interactions—Own Racial/Ethnic Group* and *Peer Interactions—Other Racial/Ethnic Group* captured student interactions—across academic and social contexts, and varying activities—with same-race/ethnicity and different-race/ethnicity peers, respectively. In the persistence literature, peer interactions have received ongoing interest. Early studies by Pascarella and Terenzini (1980) and Terenzini et al. (1981) constructed scales measuring peer interactions to predict persistence.

Their measures combined the extent of interaction with the psychological and attitudinal outcomes of interactions. However, newer research by Johnson et al. (2007; 2014) found that factors capturing interactions were empirically distinct from attitudinal and similar constructs such as sense of belonging and feelings about the campus environment. This study replicates these results, finding factors separately capturing extent of peer interactions and perceptions of the campus environment. The measures reported by Johnson et al. (2007; 2014) and the present study demonstrated robust reliability, lending further support for a distinction between interactions and feelings, and providing evidence for the Bean and Eaton (2000, 2001/2002) framework which treats interactions, and the results of such interactions, as separate constructs.

The *Opportunities for Diversity Interactions* factor gauged students' opportunities to interact with peers from different racial/ethnic backgrounds in classroom, living, and other social settings. It is similar to measures in prior research gauging the extent of students' interactions with diverse peers (e.g., Bowman, 2013; Chang et al., 2004; Johnson et al., 2007; Saenz et al., 2007b) and demonstrating adequate or better internal reliability. A wealth of evidence indicates that interactions with diverse peers positively impacts many desirable college outcomes including increased skills for functioning in a diverse society (Bowman, 2011; Hurtado, Dey, Gurin, & Gurin, 2003) and acceptance and understanding of diverse others (Davies et al., 2011; Milem et al., 2005). Diverse interactions also relate positively to psychological wellbeing (Bowman, 2010a, 2010b, 2013), sense of belonging (Locks et al., 2008), and connection to the institution (Milem et al., 2005). This research suggests that *Opportunities for Diversity Interactions* has the potential to impact psychological outcomes, attitudes toward the institution, and institutional commitment as theorized by Bean and Eaton (2000, 2001/2002).

The *Racial/Ethnic Group Learning/Identity* factor captured students' agreement that they learned a great deal about theirs' and others' racial/ethnic identity, gained greater commitment to their racial/ethnic identity, and valued interacting with students from different racial/ethnic backgrounds. While little research has examined this subject within a comprehensive persistence framework, Rodgers and Summers (2008) proposed that a measure of racial identity be added to the Bean and Eaton (2000, 2001/2002) model to better capture the psychological process and outcomes of African American students attending PWIs. With most of those in the present investigation identifying as students of color, the *Racial/Ethnic Group Learning/Identity* factor presents an opportunity to empirically investigate Rodgers and Summers' (2008) supposition.

Observed Racism in Class and Major and *Observed Racism in Living Environment* captured the extent to which students witnessed and encountered overt acts of race-related discrimination and stereotyping in academic and residence-hall settings, respectively. Students' feelings of being unwelcomed because of their racial/ethnic identity also loaded on the factors. Because both factors encompass discrimination, stereotyping, and related feelings they can be interpreted as comprehensive measures of experiences with prejudice, comparable to Cabrera and Nora's (1994) multiple-item scale that gauged campus prejudice and discrimination.

This study's identification of separate factors capturing discriminatory encounters in academic and residential contexts is counter to Johnson et al. (2014), who identified a single factor encompassing both classroom and residence hall discrimination. Other investigations have also found that racial climate and discrimination in academic and living environment settings constitute separate factors (Ancis et al., 2000; Helm et al., 1998), though these two studies did not focus on FG students. The variation in factor structure across studies demonstrates that results may reflect the composition of samples and the methodological decisions made by

scholars. Because race-related discrimination is negatively related to sense of belonging (Hurtado et al., 1999) and positively related to stress (Johnson et al., 2014; Swanbrow Becker et al., 2017), separately capturing such experiences in the class and major, and in the living environment, affords a more discrete analysis of the impacts of racism than would be provided by a single measure.

Perceptions of the institution's diversity-related practices and procedures were captured by two factors. *Institutional Diversity Commitment* principally captured the extent to which students agreed that the university was committed to a diverse administration, staff, faculty, and student body. The factor also captured agreement that the institution provided opportunities for diversity interactions and fostered understanding and appreciation of diversity. The second factor, *University's Procedures for Racial/ethnic Bias*, collected students' perceptions that the institution dealt with incidents of race-related bias visibly and effectively. While persistence research exploring students' perceptions of an institution's management of racial/ethnic bias is lacking, Hurtado (1992) and Reid and Radhakrishnan (2003) identified reliable measures of institutional commitment to diversity and found them to positively relate to the campus climate. These findings establish the relevance of students' institutional diversity commitment perceptions to how they feel about the campus climate and suggest that in the present study, such perceptions may impact psychological outcomes and other downstream variables in the model.

Psychological Outcomes

The EFA rendered two measures of students' psychological reactions to the campus and residential environments, and six indices gauging stress arising from a particular source. Together, these eight factors constitute student psychological outcomes. The model used in this

study hypothesized that psychological outcomes are impacted by students' satisfaction with their peer, faculty, and staff interactions in campus settings.

Campus Environment Perceptions and Feelings gauged the extent to which students perceived the campus as respectful, friendly, welcoming, supportive, encouraging, sensitive, and comfortable. It also captured the degree to which students felt connected, integrated, and safe. Measures capturing campus perceptions and feelings are mainstays in the campus climate literature, though relatively few studies focus on FG students. *Campus Environment Perceptions and Feelings* is consistent with measures of the campus environment found in previous studies. Rankin and Reason (2005) included a measure of campus climate with descriptors such as “friendliness” and “respectful” (p. 54). Worthington et al.'s (2008) factor analysis yielded a scale capturing the friendliness, respectfulness, and cooperativeness of campus. Gloria et al.'s (1996, 2003) measures of the university environment included warmth, friendliness, helpfulness of staff, comfort with the university environment, and—conversely—the degree to which campus seemed cold and uncaring. Johnson et al. (2014) found separate factors capturing students' perceptions of, and their feeling about, the campus environment. However, the present study—limited to only FG students—found these two aspects to load on a single factor. This suggests that FG students perceive the campus environment holistically, with their perceptions of the campus strongly connected to their feelings about it.

Living Environment Perceptions captured the degree to which students felt safe, comfortable, and respected in the residential environment. Studies exploring the residential environment tend to ask students about physical attributes, or the supports, special programs, or interactions they experience (e.g., Inkelas et al., 2007; Inkelas & Weisman, 2013; Johnson et al., 2007; Pascarella et al., 1994). A few studies have focused specifically on students' feelings in

their living environment. Kaya's (2004) study of first-year students yielded a factor capturing the degree to which students felt safe in their residence hall—consistent with *Living Environment Perceptions* in that safety was the top-loading item on the factor. Kaya did not ask students about their feelings of comfort and respect in the residence hall. Krafft (2014) also produced a factor capturing students' feelings about the safety of their residence hall, but data on students' feelings of comfort and respect were not collected. Johnson et al. (2014) identified a factor on comfort, safety, respect, and connectedness in the residence hall. While *Living Environment Perceptions* included comfort, safety, and respect it did not include students' feelings of connectedness. Rather, connectedness was captured in *Campus Environment Perceptions and Feelings*, which also included items on comfort, safety, and respect. Items gauging feelings of connectedness and integration in the living environment did not load on any factors in the present study. This suggests that FG students view and feel connection and integration on campus in a general way rather than associated with their residence hall. Alternatively, it may be that FG students' feelings with respect to their living environment relate more to comfort, safety, and respect than to connectedness or integration. It is also possible that FG students' relatively limited financial resources limit their interactions and social activity with residence hall peers (Schudde, 2016), lessening the salience of connectedness or integration in the residence hall.

Six psychological outcome factors captured various sources of stress. Sources included *Academic Demands, Academic Environment, Social Connections, Financial, Family, and Diet and Exercise*. Each factor captured the extent of stress experienced, from *no stress* to *severe stress*. While college student stress has received considerable attention in the research literature, relatively few individual studies have explored its dimensionality through factor analysis for scale identification, construction, and psychometric assessment. Those that have include Johnson

et al. (2014), Locke et al. (2011), and Stallman and Hurst (2016). Johnson et al.'s (2013) study of first-year students identified many of the same stress factors found in the present study including financial, social difficulty, academic skills, academic environment, and family stress. Locke et al. (2011) found factors capturing students' diet-related concerns, social anxiety, family distress, and academic distress. Stallman and Hurst (2016) found several factors gauging stress pertaining to academics, parenting and childcare, relationships, health, and finances and housing. The areas of stress established by Johnson et al. (2014), Locke et al. (2011), and Stallman and Hurst (2016) in general parallel and lend credence to the categories of stress identified in the current study. The results of this study provide evidence that FG college students at prestigious institutions may experience dimensions of stress that are similar to college enrollees in general.

Attitudes

The *Institutional Commitment* factor captured if students would choose to attend the same institution if they could start over, and if they had ever thought of leaving the institution. These two themes—satisfaction with choice of institution, and attachment to it—are consistent with the definition of institutional commitment as determined by Robbins et al.'s (1994) meta-analysis of the psychosocial correlates of student persistence. The concordance between Robbins et al. and the present study supports the validity of the *Institutional Commitment* factor. While reliability of the measure was only .64, reliability coefficients as low as .60 are acceptable for psychological constructs (Multon & Coleman, 2010). *Institutional Commitment's* vital theoretical role also merited its inclusion in the study.

Intention

Intention captures whether a student plans to continue their enrollment at the institution. While intention offers little in the way of explaining persistence, it conveys students' concrete

persistence plans and thus it is often highly predictive of actual persistence (Bean, 2005). This study captured intention through a single item asking students if they plan to return for the next semester (no students in the sample were near graduation). While Cronbach's alpha cannot be obtained for a single-item measure, and multiple items for measuring a construct is recommended (Furr, 2018), a single item can suffice when the object of measurement is concrete and its meaning readily grasped (Rossiter, 2002). Furthermore, if a single-item measure demonstrates predictive validity, it can be regarded as sufficiently reliable (Bergkvist & Rossiter, 2007). With evidence that a similar, single-item measure of intent to return is predictive of retention (Johnson et al., 2014), a single-item measure was used in this study.

Summary—Research Question 1

Using factor analytic methods, this study provided evidence that students' perceptions of their experiences and interactions, their psychological reactions, and their attitudes comprise latent constructs. The variation of students' SUSES responses was well-represented by the EFA factors, and the factor-based scales developed through the EFA demonstrated adequate—and in many cases, strong—reliability. The factors in this study were consistent with those in the literature utilized to gauge and study students' experiences on campus, lending them validity. Having demonstrated desirable psychometric properties and consistency with the literature, the scales were used in research question two.

Research Question 2

This study explored factors related to first-year FG student persistence at a selective, private, residential university through application of a modified version of Bean and Eaton's (2000, 2001/2002) psychological model of student retention. Variables representative of each section of the model were included. Models were fitted for retention to the second year and

graduation after four and six years; they accounted for 42%, 40% and 38% of the variation in the respective outcomes. Goodness-of-fit indices demonstrated that the hypothesized models satisfactorily fit the data.

In all final models, the entry characteristics, environmental interactions, and psychological outcomes sections each contained multiple variables having a direct or indirect path to the succeeding segments of the model and to the outcome. Attitudes, intention, and intermediate outcomes—measured as institutional commitment, intent to return, and satisfactory academic progress respectively—all figured in the models as well. While SAP exerted the statistically largest impacts on each of the outcomes, the environmental and psychological predictors also directly or indirectly impacted persistence. This section of the paper discusses the variables having impacts on persistence. Since there were more similarities than differences in the composition of the three models, they are discussed concurrently. Because research question 2 concerns the applicability of the modified Bean and Eaton (2000, 2001/2002) model for studying FG student persistence, and because key themes from the results generally relate to entry characteristics, environmental interaction, or psychological outcomes, the discussion is organized around the sections of the model.

Entry Characteristics

In Bean and Eaton (2000, 2001/2002), entry characteristics can act alone or with other factors to impact persistence (Bean, 2005). Across models, several entry characteristics directly or indirectly impacted outcomes. Though entry characteristics are generally viewed as fixed or stable quantities, their impacts can vary across time (Ishitani, 2003). This section details the *entry characteristics* section of the final path models.

High School GPA. This measure's indirect, positive impact on persistence through first-semester SAP is consistent with previous research on college academic performance (Belfield & Crosta, 2012; Davis, 2010) and persistence (Kopp & Shaw, 2016), and suggests that FG students with low HSGPA may struggle to maintain SAP—putting them at greater risk of attrition. HSGPA's positive impact on diversity interactions and perceptions of institutional diversity commitment, and its negative relationship with students' observations of race-related discrimination, may reflect students of color—almost sixty percent of this study's sample—who attended predominantly White high schools, preparing them to cope with experiences of discrimination in advance of their attending a predominantly White university (Johnson et al., 2014). Students with lower HPGPA may also need to devote more time and effort towards SAP in college, affording less time to socialize and interact with diverse peers or other students (Fischer, 2007). In the six-year graduation model, the positive impact of HSGPA on comfortable interactions in class may reflect the nature of students' interaction with faculty. FG students with higher HSGPAs may be more likely to enroll in college honors or seminar courses, increasing the likelihood and frequency of positive classroom interactions (Beattie & Thiele, 2016), while those with lower HSGPAs may be more likely to converse with faculty about low performance and poor grades, or referrals for tutoring—potentially uncomfortable conversations.

Preparedness for Academic Demands and the Social Environment. Both forms of preparedness positively impacted persistence through environmental interactions and psychological outcomes. Social preparedness has previously been found to positively impact interactions in the classroom (Ryan et al., 2001; Johnson et al., 2014), on campus (Johnson et al., 2014), and with diverse peers (Saenz et al., 2007b). In the current study, FG students who feel more socially prepared may be more likely to avail themselves of opportunities for diversity

interactions (Johnson et al., 2014). In the retention model, the negative relationship between social preparedness and perceptions of racism in the residence halls may reflect greater social interactions—including exposure to diversity in high school or early in college—among FG students, equipping them for racialized aspects of campus life (Johnson et al., 2014). Those feeling socially prepared may also participate more in social and co-curricular activities, leading them to avoid potential acts of discrimination in the residence hall.

In the graduation models, the positive impact of social preparedness on campus environment perceptions and feelings and negative impact on family stress may reflect that those feeling more socially prepared are more confident in seeking support or becoming socially involved on campus (Ryan et al., 2001). The resulting social contact may engender supportive and positive interactions with others, leading to stress reduction (Barry et al., 2009). In the retention model, students' appraisals of academic preparedness were directly and negatively related to academic environment stress. While previous research has found a positive connection between college students' confidence to succeed academically and their actual academic performance (Johnson et al., 2014), both Ramos-Sanchez and Nichols (2007) and the present study did not find this relationship among FG students. These results suggest that for FG students, self-assessments of academic preparedness have a more direct connection to—and serve as an early indicator of—academic stress rather than “hard” measures such as HS GPA.

Importance of Graduating- to Oneself. The indirect, positive impact of this measure of resilience on persistence is consistent with previous research connecting perseverance with intent to persist (Bowman et al., 2015, 2019) and with the view that resilience is a strength of FG students that can foster their persistence (Covarrubias et al., 2019). The largely indirect impact of resilience—and the much greater and direct impact of first-semester SAP—on intermediate

outcomes found in this study parallels Sweet et al. (2019) and is consistent with Johnson et al.'s (2015) finding that resilience impacts GPA only indirectly. For previous research finding a direct link of resilience to persistence (e.g., Duckworth et al., 2007; Duckworth & Quinn, 2009; Pascarella & Chapman, 1983), this and similar studies suggests that attitudes and intentions as well as SAP likely mediate the resilience-persistence connection. Together, these findings suggest that resilience has a compensatory and positive impact on FG persistence, especially when early academic performance puts them at increased risk of attrition (Allen, 1999). In the graduation models, the direct, positive impact of resilience on environmental interactions and indirect impact on graduation may have to do with the wording of the *importance...* question on the SUSES instrument, which explicitly references graduation. It may be the case that variation specific to environmental interactions—and subsequent graduation—in the graduation model simply did not exist for the retention model.

Student of Color. The results of this study show that interacting and living in the institutional environment is disparately challenging for FG students of color, a finding consistent with prior path analytic studies showing that students of color are less likely to experience comfortable academic interactions, opportunities for diversity interactions (Johnson et al., 2014), and positive diversity interactions (Locks et al., 2008), and are more likely to observe racism in the living environment (Johnson et al., 2014). The present study provides additional evidence that FG students of color experience less hospitable classroom and institutional environments, with fewer opportunities for interaction.

In the retention model, students of color had greater persistence. This may reflect their drawing upon the specific cultural assets and knowledges of their peers, families, and communities while attending college—an empowering strategy at PWIs, where the dominant

campus culture is typically middle-class, White, and not oriented to diverse students (O'Shea, 2016; Yosso, 2005). Though this study did not assess students' cultural strengths and assets, scholars have called for additional theory and research to better align persistence models with the personal and culturally-specific assets that students bring to college and with the full diversity of their experiences (Baker et al., 2021; Rodgers & Summers, 2008). The present study's focus on FG students at a prestigious private institution is driven by a recognition of this need, even as it—like many studies—is limited by the methodology and specific set of variables it employs.

Parental Educational Attainment, and Financial Need. The positive impact of parental education on first-semester SAP may reflect greater high school curricular rigor for students whose parents attended college (Martinez & Klopott, 2005; Warburton et al., 2001); a more-rigorous high school curriculum is positively correlated with college GPA (Warburton et al., 2001). Parental education's positive impact on comfortable interactions in class is consistent with research showing that classroom interactions increase with increasing parental education (Engle, 2007; Mulvey, 2009; Smith & Commander, 1997). The direct negative impact of parental education on family stress may reflect heightened demands placed on students by families with no prior college experience (Jenkins et al., 2013; Swanbrow Becker et al., 2017).

The negative impact of financial need on students' interactions with peers from other racial/ethnic backgrounds in this study was also reported by Johnson et al. (2014) for students of color. Johnson et al. surmised that access to fewer financial resources may limit socializing for students of color, a hypothesis supported by Cabrera et al. (1992) and Rubin and Wright (2017). This interpretation is plausible, as most students in this study identify as students of color yet attend a PWI. Financial need had a slight, indirect positive effect on six-year graduation. Greater need indirectly and negatively impacted family stress, which positively impacted institutional

commitment and graduation. In the four-year model, financial need negatively impacted first-semester SAP which—through subsequent SAP—had a negative impact on on-time (i.e., four-year) graduation. It may be that FG students with lesser financial means were more likely to work in college (Eagan et al., 2016), slowing academic progress and delaying graduation.

Environmental Interactions

Environmental interactions—positive or negative—give rise to psychological reactions and determine students' degree of satisfaction with the institution and their commitment to it (Bean & Eaton 2000, 2001/2002). Consistent with the hypothesized model, the present study found that environmental interactions had direct impacts on psychological outcomes and indirect impacts on retention and graduation. SAP after the first semester also figured prominently in the models. This section details the impacts of the environmental interactions factors.

Diversity Interactions, and Institutional Diversity Commitment. The prominence of diversity- and racism-related environmental interactions across outcomes foregrounds campus climate as a major finding of this study. These factors were the main determinant of students' feelings about campus and how much stress they felt. Additionally, the impacts of each entry characteristic on outcomes were wholly or partially mediated by environmental interactions.

The positive relationship between diversity interactions and feelings about the campus environment may reflect new perspectives gained by FG students through experiences with diverse peers, spurring social and psychological growth (Gurin et al., 2002). While the degree of diversity in the student body determines the potential for diversity interactions, it is the extent of opportunities to interact in formal and informal settings that determines the actual benefits of such interactions (Denson & Chang, 2009; Gurin et al., 2002). In finding that opportunities for diversity interactions positively impact campus environment perceptions, this study shows the

importance of these opportunities to FG students at a prestigious residential institution.

Additionally, because opportunities for diversity interactions occur in social settings, they can equip students to interact more effectively with others (Battistoni & Longo, 2005; Hurtado, 2005; Denson & Chang, 2009) leading to a more-positive view of the campus environment.

In the graduation models, opportunities for diversity interactions and peer interactions—other racial/ethnic group had negative and positive impacts on family stress, respectively. Opportunities to interact with diverse peers may lead to sharing and empathizing about family problems or function as a diversion from such issues, providing a means to cope and reducing family-related stress (Gist-Mackey et al., 2018). The peer-interaction factor primarily captures hanging out and going out—social activities likely to occur on evenings and weekends. It may be that time spent socializing with other-race/ethnicity peers—a likely arrangement, given the high proportion of students of color in the sample, attending a PWI—detracts from time spent interacting with, visiting, or supporting family when there is an expectation to do so, resulting in family stress (Jehangir, 2010b; Mehta et al., 2011; Pedrelli et al., 2015; Vasquez-Salgado et al., 2015). The negative, indirect impact of other-racial/ethnic-group peer interactions on graduation—through family stress and reduced institutional commitment—is at odds with prior research indicating a positive link between such interactions and students’ sense of belonging (Locks et al., 2008; Maestas et al., 2007; Strayhorn 2008). However, these studies did not focus on FG students, who tend to face greater family-related commitments that can compete with the demands—social, or otherwise—of college (Covarrubias et al., 2019; Jehangir, 2010b). The results of this study suggest that for FG students, time and energy spent socializing with peers may compete with family commitments, leading to family-related stress.

Institutional diversity commitment positively impacted all three outcomes through campus environment perceptions and feelings, and in the retention model it negatively impacted academic environment stress. These results are consistent with other studies showing that an institution's commitment to diversity positively relates to perceptions of both campus climate (Hurtado, 1992; Reid & Radhakrishnan, 2003) and a supportive campus (Umbach & Kuh, 2006). This study provides evidence that an institution's efforts to foster diversity, and interactions and understanding among a diverse campus constituency, positively impact students' perceptions of a friendly, welcoming, and supportive environment (Hurtado et al., 1998; Loo & Rolison, 1986). This study reinforces Rankin et al.'s (2005) argument that institutions must go beyond rhetoric to actually encourage and make visible their efforts to facilitate diversity interactions, and suggests that FG students at institutions that do so will view the campus as more comfortable, feel less academic environment stress, and be more likely to persist.

Comfortable Interactions in Class. In this study, the positive impact of comfortable interactions in class on perceptions of the campus environment supports Bean's (2005) assertion that positive in-class experiences and interactions impact persistence through feelings of connectedness to the institution. The results also parallel research showing positive impacts of course-related interactions with faculty on FG student campus satisfaction (Kim & Sax, 2009; Sass et al., 2018) and persistence (Sass et al., 2018). In the retention model, the negative impact of comfortable interactions in class on academic environment stress is consistent with Inkelas et al., (2007), in which faculty interactions eased FG students' academic transition to college. For FG students, positive classroom interactions help FG students acclimate to and navigate the collegiate academic environment—positively impacting their view of campus, reducing academic environment stress, and increasing persistence.

Observations of Racism. FG students' observations of racism—in the living environment in the retention model, in the classroom in the graduation models—had deleterious impacts on their psychological outcomes. The separate locations in which racism impacted retention and graduation may have to do with timing. Retention to the third year is assessed after students' first two years at the institution, during which students are required to live in university residence halls. The temporal proximity of discriminatory residence hall experiences with the timing of the retention outcome likely caused those experiences to exert a substantial impact on retention. Graduation after four and six years is well after expiration of the residence hall living requirement, when students can presumably exercise choice in finding a living arrangement suitable for them. As a result, discrimination associated with classroom and major-related interactions likely becomes a more salient source of race-related experiences than housing. This is not to imply that racism associated with the living environment ceases; rather, its impact is attenuated relative to observations of racism in the class and major.

This study is consistent with prior research establishing the harmful impacts of race-related discrimination on psychological outcomes. For students of color, greater exposure to racism and racist acts across classroom and living environments correlated with less favorable feelings towards campus and greater academic environment stress, negatively impacting persistence (Johnson et al., 2014). Pervasive experience with discrimination in the classroom also negatively impacts feelings of connectedness to peers and campus (Booker, 2007). Both White students and students of color report greater alienation in connection with discriminatory experiences in the classroom (Cabrera & Nora, 1994). For the FG students in this study, observations of racism adversely impact how students feel about campus and how much stress they suffer. To the extent that students experience acts of racism, the positive impacts of

diversity interactions and an institution's commitment to diversity on psychological outcomes—and ultimately, persistence—can be negated when students experience discriminatory acts at the hands of peers, instructors, and residence hall staff. These findings suggest that favorable psychological outcomes result from a campus environment in which FG students are free from racist and discriminatory experiences.

First-semester Academic Progress. This study's findings are consistent with previous research showing that college academic performance is vital to FG student persistence (Choy, 2001; Dika et al., 2016; Lohfink & Paulsen, 2005; Martinez et al., 2009; Warburton et al., 2001), including research in which retention is modeled with the Bean and Eaton (2000, 2001/2002) framework (Johnson et al., 2014). First-semester SAP exerted its impacts on outcomes largely through subsequent SAP, affirming the importance of early academic success for FG students. The modest, negative impact of SAP on campus environment perceptions and feelings in the retention model may reflect a subset of high-achieving students who come to view the campus unfavorably, leaving by the end of the second year and possibly enrolling elsewhere. This interpretation is consistent with national transfer-out patterns showing that students starting at four-year institutions are most likely to transfer to another institution after the second year (Shapiro et al., 2018).

Psychological Outcomes

The role of psychological outcomes in student persistence as theorized by Bean and Eaton (2000, 2001/2002) has received relatively little scholarly attention. Psychological outcomes have been shown to impact retention and be impacted by student entry characteristics and environmental interactions (Johnson et al., 2014). The results of the current study provide additional evidence that psychological outcomes mediate the impact of entry characteristics and

students' experiences on institutional commitment, and indirectly impact both retention and graduation.

Campus Environment Perceptions and Feelings. In three all models, campus environment perceptions and feelings positively impacted institutional commitment, indirectly impacting retention and graduation. The sequential relationships between racial climate and classroom interaction variables, feelings about the campus environment, and commitment to the institution in this study are consistent with Johnson et al. (2014), in which campus environment perceptions mediated the relationship between witnessing racist acts on campus and institutional commitment for students of color. While sense of belonging is impacted by the quality of diversity interactions (Hurtado & Carter, 1997; Hurtado & Ruiz Alvarado, 2015; Johnson et al., 2007; Locks et al., 2008; Solórzano et al., 2000; Strayhorn, 2018; Yosso et al., 2009) and feelings of connectedness to the institution foster institutional commitment (Gloria et al., 2005; Hausman et al. 2007, 2009; Johnson et al., 2014), this study joins these two themes by finding that the impact of students' diversity-related and in-class interactions on attitudes towards the institution are filtered through their feelings towards the campus. Thus, how FG students feel about the respectfulness, friendliness, connectedness, supportiveness, and safety of campus mediates the impact of their environmental interactions on their institutional commitment. This study indicates that psychological outcomes, while lacking the visibility of environmental interactions, nevertheless are material for FG students and impact their persistence.

Stress. In this study, students' experiences of stress negatively impacted institutional commitment and indirectly, persistence. Family stress had a direct, negative impact on 4-year graduation; its total effect on graduation was exceeded only by specific SAP measures and intent to return. The negative impacts of stress on persistence are consistent with previous research on

college students (Johnson et al., 2014; Saunders-Scott et al., 2018; Wilbur & Roscigno, 2016; Zhang & RiCharde, 1998) and FG students (Pratt et al., 2017; Wilbur & Roscigno, 2016). With stress increasing among college students (ACHA, 2013, 2018), this study suggests that FG students—who tend to experience greater levels of stress than other students (Stebbleton et al., 2014)—are at particular risk of attrition as a consequence of the stressors they experience. FG students attriting from a prestigious institution may be less likely to achieve the career or other opportunities that originally motivated them to enroll.

The present study also provides additional interpretations of existing research looking at relationships among stress, institutional commitment, intent to return, and persistence. Amirkhan and Kofman (2018) studied connections between general stress, GPA, and persistence for first-year FG students of color. Stress predicted GPA, but not persistence. Amirkhan and Kofman proposed that a measure of “identification with the university” (p. 307) could add to an understanding of the relationship of stress to academic outcomes. In finding that institutional commitment mediates the relationship of stress to SAP and persistence, this study lends empirical support to Amirkhan and Kofman’s supposition. Sandler (2001) defined stress as the effort and energy students spent in meeting the demands of college and found that it positively impacted institutional commitment. In concluding that stress benefits institutional commitment, Sandler illustrates how a particular construal of stress affects the results and interpretations of a study. Strauss and Volkwein (2004) found that first-year students’ interactions with faculty and peers were positively correlated with institutional commitment. The present study’s retention model indicates that this connection is mediated by academic environment stress. While Strauss and Volkwein did not consider generational status, consideration of academic stress or similar

psychological outcomes may have revealed that the connection between experiences and commitment is contingent upon psychological outcomes.

In the graduation models, family-related stress directly and negatively impacted institutional commitment and graduation. These results provide additional evidence for the negative impacts of family stress on persistence for FG students, a finding that is well-established in the literature (Gibbons et al., 2019; Wilbur & Roscigno, 2016). The items in the current study's family stress factor align with previous research indicating that a lack of family support (Jehangir, 2010b; Lowery-Hart & Pacheco, 2011; Wang & Castañeda-Sound, 2008), being the first in the family to go to college (McCoy, 2014), caring for sibling children (Covarrubias et al., 2019; Vasquez-Salgado et al., 2015), and trying to meet high family expectations for success (Darling et al., 2007; McCoy, 2014; Shields, 2002) all constitute sources of stress for FG students. That the impacts of family stress on graduation are direct only in the 4-year model may reflect the temporal proximity of this outcome relative to six-year graduation, reflecting that the survey data in this study were collected towards the end of students' first year. Alternatively, it may be that stress-inducing family situations delay on-time (i.e., four-year)—but not six-year—completion.

The results of this study demonstrate the importance of psychological outcomes, which directly impact FG students' institutional commitment and directly and indirectly impact their persistence. Consistent with the Bean and Eaton (2000, 2001/2002) framework, psychological outcomes mediate the relationship between environmental interactions and institutional commitment. For research linking classroom and residence hall experiences to outcomes including institutional belongingness and persistence (e.g., Booker, 2007; Cabrera et al., 1999; Johnson et al., 2007; Loo & Rolison, 1986; Pascarella & Terenzini, 2005; Tinto, 1997), this

study suggests that such links may be mediated by psychological outcomes that could further refine or explain such relationships. For FG students at prestigious institutions, this study indicates that psychological reactions resulting from experiences in the institutional environment give rise to attitudes towards the institution which impact persistence.

Attitudes

The Bean and Eaton (2000, 2001/2002) framework hypothesizes that attitudes towards an institution determine intention to persist. Students holding positive attitudes are expected have greater intent to persist (Bean, 2005). In the present study, attitudes were captured as students' institutional commitment.

In all three models, institutional commitment directly and positively impacted intent to return, and positively and indirectly impacted persistence. Previous research has shown that intent to persist is positively impacted by attitudes towards the institution (Bowman & Denson, 2014; Staats & Partlo, 1990) and specifically, institutional commitment (Bean, 1980, 1983; Berger & Braxton, 1998; Braxton et al., 1995; Hausman et al. 2007, 2009; Johnson et al., 2014; Nora & Cabrera, 1993). The current study supports Bean and Eaton's (2000, 2001/2002) and Bean's (2005) proposition that attitudes directly impact persistence intentions and indirectly impact actual behavior, showing that these relationships hold for FG students at prestigious institutions. These results illustrate the centrality of FG students' positive attitudes towards the institution as predicting their ongoing enrollment and eventual degree attainment.

Intention

Bean and Eaton (2000, 2001/2002) propose that intention captures a student's plans to stay at or leave the institution. In the current study, it is measured as a student's intent to return for the second fall, and it is located immediately prior to intermediate outcomes. Intention to stay

or leave is hypothesized as the culmination of student interactions within the institutional environment and the resulting psychological outcomes and attitudes (Bean, 2005).

In this study, intent to return had a positive, direct impact on retention, and indirectly impacted retention through its positive relationship with second-year SAP. The direct impact of intention on outcome is consistent with the hypothesized model, though the modest size of the path coefficient (.12)—and the greater indirect impact of intention through second-year SAP—may reflect that retention to the third year was assessed a year and a half after students were asked about their intent to return. In the graduation models, intention operated through SAP after the first and second years to indirectly impact graduation. The lack of a direct path from intention to graduation is plausible given the ongoing importance of continued SAP for graduation, and because the effects of self-reported intention diminish over time from when they are first collected (Bean, 2005). This study's finding of positive impacts of intention on persistence, and the mediating role of SAP on the relationship between intention on persistence, are consistent with prior research (Johnson et al., 2014; Sass et al., 2018), and establish these patterns for FG students.

In all models, intention showed relatively large effects on outcomes. However, on its own it provides little explanation into the factors and processes leading to retention and graduation (Bean, 2005). As such, intention is most appropriately interpreted as capturing the impacts of FG students' interactions with the institution, psychological outcomes, and resulting attitudes as they impact intent to persist rather than as a definitive predictor of persistence behavior.

Intermediate Outcomes

Across models, SAP exerted a large, positive impact on persistence. Because SAP is placed just prior to outcomes in the models, and because failure to maintain SAP ultimately

results in academic suspension and/or dismissal from the institution, its relatively large impact on persistence is unsurprising. This relationship is consistent with prior research examining similar measures within the Bean and Eaton framework (Johnson et al., 2014) and with research examining how college academic performance mediates the relationship between college experiences and psychological factors, and persistence (Martinez et al, 2009; Sass et al., 2018).

Implications for Practice

This investigation applied the Bean and Eaton (2000, 2001/2002) framework to explore the correlates of retention and graduation for FG students enrolling at a private, prestigious, residential institution. Each model accounted for approximately 40% of the variation in outcome, indicating the utility of this study for use by institutions in their own retention efforts and providing a compelling rationale for use of the Bean and Eaton (2000, 2001/2002) model in persistence research. Applying the model and focusing on FG students is consistent with an anti-deficit framework, as it is an approach that centers the student experience and acknowledges the role and responsibility of the institution for fostering a supportive, positive climate. In doing so, it rejects a comparativist lens that often labels the FG student as less than or lacking.

Across the models in this study, SAP was strongly related to outcomes and several factors were shown to impact students' feelings about campus—which in turn impacted institutional commitment, intent to return, and persistence. These patterns suggested several specific strategies for increasing persistence. The implications for practice include academics, the student experience, the campus climate, and call upon the institution and its leadership to foster the conditions and supports for FG student success.

The large, positive impacts of SAP on retention and graduation establish its importance for persistence. Academic supports in college positively impact students' SAP and resultant

persistence (Bowen et al., 2009; Kalsbeek, 2013). Accordingly, institutions should foster their FG students' SAP early in college and support it to graduation. Programs and initiatives to accomplish this may include the offering of core courses over the summer for free or reduced tuition to give students an advanced start or an option for catching up. The importance of SAP should be communicated to students in orientation programming (Kalsbeek, 2013), and students should be provided with prompt feedback about their course performance—and opportunities for academic support—early in the semester. Use of an active and collaborative learning pedagogy by faculty can also increase FG student engagement and success (Soria & Stebleton, 2012). Advisors should work closely with students to confirm that course selections align with degree requirements. While this study showed that academic progress is not the sole predictor of FG retention and graduation, it is a critical piece of an institutional effort to increase persistence.

The present study showed that FG students who felt comfortable interacting with faculty about course-related or personal issues also felt more positive about the campus environment and reported less stress, and ultimately achieved higher SAP and persistence. Similarly, previous research has shown that students' faculty and peer interactions constitute an affective experience that impacts persistence and graduation (Booker, 2007; Pascarella & Terenzini, 2005; Tinto, 1997). These findings indicate that faculty should be cognizant of and foster FG students' comfort with course-related interactions, which can have broad, positive impacts on psychological and academic outcomes beyond performance in the immediate class. Because FG students may not be readily and visibly identifiable and are less likely to interact with faculty in the classroom (Kim & Sax, 2009), individuals who teach should make themselves accessible and approachable to their students. An informal yet collegial learning atmosphere can also help students to feel comfortable engaging faculty for support (Chung & Hsu, 2006; Rendón, 1994).

Encouraging students and providing them with multiple ways to get in touch (e.g., after class; through email; office hours) are additional ways that faculty can demonstrate their accessibility and approachability. Faculty should also strive to ensure that all students including students of color—who reported less comfort with classroom interactions in the current study, consistent with prior research (Agnew et al., 2008; Marcus et al., 2003)—have validating classroom experiences that empower them (Hurtado et al., 2011; Rendón, 1994), leading to a more-favorable view of the institution, commitment to it, and persistence. Learning community participation is associated with increased student involvement in active and collaborative learning as well as student-faculty interaction (Pike et al., 2011)—forms of engagement that this study and other research (Rendón, 1994) indicate are beneficial for student learning. More generally, institutions should consider developing and implementing learning communities serving the needs of FG students, and actively recruit and encourage participation.

In this study, greater opportunity for diversity interactions and greater agreement that the institution was committed to diversity positively impacted feelings about the campus and commitment to it, which correlated with greater SAP and persistence. This indicates that institutions serving FG students, including private and prestigious ones, must understand their responsibility for ensuring a campus climate in which students feel comfortable and connected with their diverse peers in the classroom, the living environment, and while sharing in activities on campus. Institutions must also realize that their efforts to foster and support diversity interactions should be supported by a clear institutional commitment to diversity with safe, supportive, and intentional spaces for diversity interactions (Bowman & Park, 2015; Chang et al., 2004). Along with funding offices to support multiculturalism and inclusion, institutions need to support diversity and safe spaces in the classroom. Funding for faculty professional

development, and providing funds to faculty for developing initiatives to foster inclusiveness and impact the campus climate, are strategies that enable them to leverage their position and experience to accomplish a positive and supportive classroom climate for diversity.

Institutions should also be aware that FG students are more likely to work (Burdman, 2005; Christou & Haliassos, 2006; Engle & Tinto, 2008), and should schedule opportunities for interaction that account for their FG students' availability (Change et al., 2004). Additional financial aid can mitigate the need to work, freeing time for greater interaction. Learning communities present an option for facilitating FG student diversity engagement; participation in such programs is associated with a greater degree of diversity experiences and with perceptions that the campus environment is supportive (Pike et al., 2011). Finally, because diversity interactions require a diverse student body (Chang et al., 2004; Pike & Kuh, 2006; Saenz, 2010), institutions need to recruit, admit, and matriculate and retain diverse incoming classes. Students from diverse high schools can be invited to campus for workshops, summer classes, and other activities to familiarize them with the institution and help them qualify for admissions. Visitation to high schools and outreach to diverse neighborhoods via mail and electronic media can also introduce high school students to the institution. Once enrolled in college, the retention of diverse students can be supported through tutoring, mentoring, opportunity programs, and other academic and social supports.

Through use of institutional records, survey data, and application of statistical modeling this study identified correlates of persistence reflecting a myriad of student experiences and provided evidence of processes through which FG students persist and graduate. The resulting path models and the relationships of variables point to both areas in which students may struggle as well as experiences that may be beneficial for persistence. Statistical and predictive models of

persistence point to levers that an institution can employ to foster retention and graduation (Ward et al., 2012). Regular use of predictive models can complement other retention strategies, giving institutions greater insight into suitable programming and support for students. Application of persistence modeling need not be limited to FG students; inclusion of other underserved populations or additional data would allow the construction of stronger retention models—specific to the institution in which they are developed—with the potential to enhance the student experience and inform methods for supporting persistence. Models could also answer questions about specific retention factors. For example, are certain source of stress more impactful for specific populations of students? Models of retention and graduation built for specific groups of students could help to answer this and other questions, pointing to institutional practices to assist students in persisting.

The COVID-19 pandemic caused extensive disruption for higher education institutions and students. FG students were more heavily impacted than others, particularly with the move to virtual instruction, family issues, and mental health (McCarthy, 2020; Orme, 2021; Soria et al., 2020). The results of the present study point to ways that institutions, and their faculty and staff, can support their FG students during a time of national crisis and the aftermath. The implications for practice stemming from COVID-19 experiences and reflection are not necessarily bounded by pandemic conditions, meriting broader consideration to facilitate the success of FG students. Given that students faced psychological struggles during the pandemic, the Bean and Eaton (2000, 2001/2002) model is useful in being able to account for these experiences.

Remote learning presented technological challenges, conflicted with home circumstances, and was uncomfortable for FG students (Orme, 2021; Shapiro et al., 2020). In response, institutional technology support and other campus services should address students' technology-

related barriers including disparities in accessing and paying for technology (McCarthy, 2020). This study showed that FG students enjoying comfortable interaction with faculty are more likely to feel positively about campus, and that such interactions can reduce stress. Accordingly, faculty should learn about the challenges facing their remote learners and strive to be available to students at times that include the early morning and evening. Faculty can also record lectures and make course material available asynchronously—and assign flexible times and due dates for online activity such as discussions and assignments (Shapiro et al., 2020). Initiatives to make remote learning more feasible and practical for students need not be discontinued once pandemic exigencies pass. Remote learning and ongoing and faculty flexibility may benefit FG students particularly when in-person attendance presents challenges.

This study showed that for FG students, positive interactions and feelings of belongingness relate positively to institutional commitment and persistence. With students attending remotely or as commuters during the pandemic, their opportunities to interact with others through in-person living environments and co- and extra-curricular involvement was curtailed. Course-related interactions became a primary means through which students developed and maintained connections with faculty, peers, and the institution. In response, faculty—a primary conduit to the institution for students during remote learning—should provide learners with opportunities to connect academically and socially. Faculty should be provided with professional development to stay informed of the ways in which online learning environments present novelty and challenge for their students and ensure that their classes are engaging, inclusive and validating (McCarthy, 2020). Because diverse—including FG—students may not readily perceive opportunities for engagement or see such opportunities as open to them (Rendón, 1994), faculty should collaborate with advisors and with student affairs to inform

students that the institution supports them, and communicate through a variety of modes to appraise students of opportunities for online engagement such as fitness classes and student organizations (McCarthy, 2020). While faculty shouldered much of the burden in the rapid transition to remote learning during the pandemic, their role in keeping students connected to the institution expanded with the diminishing or elimination of co- and extra-curricular activities and with students' move off campus. For faculty and also for staff, being responsive to FG students and engaging in personal and informal interaction with them can facilitate students' feelings of connectedness to the course and to the institution, which the present study suggests may lessen stress and positively impact institutional commitment and persistence.

For many FG students, the pandemic brought increased stress. This was due to the move to online learning, shift in living arrangement, loss of campus socializing and supports, and financial or living struggles at home (McCarthy, 2020; Orme, 2021; Shapiro et al., 2020; Soria & Horgos, 2021). Some of these stressors relate directly to those identified in the present study. The weakening of existing relationships with faculty, as well as making new connections, became difficult. Online class environments could be unfriendly and negative, especially when small-group breakout sessions went unmoderated (Orme, 2021). Family stressors included illness, death of relatives, and increased obligations including childcare. Family-related challenges—stressors in their own right—caused additional stress when they interfered with the demands of remote learning (Orme, 2021). These experiences constitute academic environment stress and family stress, which—as this study finds—negatively impact retention and graduation respectively. To avert or mitigate these stressors, faculty should use email, surveys, or focus groups to learn about the challenges that their students are facing. Professional development can further assist faculty to understand and support the needs of their students (Orme, 2021).

Instructors should maintain flexibility in scheduling class activities and make use of recordings so that FG students can view them outside of the standard class schedule. Counseling services should ensure that student supports are accessible, and advertise their resources—with the assistance of faculty—to FG students (Soria et al., 2020).

In the present study, financial need was negatively related to on-time (i.e., four-year) graduation, though it had a slight, positive impact on six-year graduation. Because COVID19 had particularly negative impacts on the finances of disadvantaged students and their families in general (Aucejo et al., 2020; Shapiro et al., 2020) and FG students in particular (Soria et al., 2020), institutions should be receptive to FG students' appeals for emergency and pandemic-related financial assistance including scholarships and grants. Virtual work-study provides financial aid and provides a connection to the institution (Soria et al., 2020). Making it available to FG students will help them and their families meet not only tuition, room, and board fees but can also mitigate technology, health maintenance, and other expenses and also soften the impacts of pandemic-related job loss.

As far as the author can discern, no prior research has employed the Bean and Eaton (2000, 2001/2002) model to study FG persistence at a large, private, residential, prestigious institution. The results of this study, which utilized a psychological framework to explore the impacts of students' experiences, the campus environment, and resulting psychological outcomes—and demonstrates the value and effectiveness of exploring persistence from a standpoint that centers and values their own experiences and their reactions to those experiences—suggested several ways that educators can better support the persistence of FG students at prestigious residential institutions. While the present study represents a specific group of first-year FG students at a single U.S. higher education institution, its findings and

conclusions may generalize to other FG students studying at similar institutions. Application of, and research utilizing a psychological perspective on, these approaches at other types of colleges and universities may reveal that they have broad relevance for serving the general college going FG population. At the same time, institutions should implement their own, tailored research program to inform locally applicable and individualized programs, strategies, and interventions for their FG students.

Limitations

This study is subject to several limitations relating to its methodology, generalizability, and utility for facilitating the support and success of FG students. One limitation of this study is that it was situated at a single large, 4-year, private, prestigious, residential PWI in the northeastern U.S. An organization's retention and graduation rates are influenced by and reflect a myriad of institutional dimensions such as control, size, selectivity, cost of attendance, percentage of resources invested in student services, racial climate, and culture (Astin & Oseguera, 2012; Kuh, 2002). These attributes may operate independently of entering student characteristics including parent educational level (Astin & Oseguera, 2012). Thus, the results and conclusions of this study may reflect unique qualities of the institution, limiting generalizability to other colleges and universities. While many of the findings of the present study are consistent with prior research, those that are novel or involve mediation may reflect local context rather than general conditions across higher education institutions (Aspelmeier et al., 2011). While it has been stated that "all retention is local" (Kalsbeek, 2013, p. 101) and thus unique factors—as well as relationships among those factors—impact retention at any given institution, replication of this study's findings employing other samples at other institutions—or use of a multiple-

institution design—could permit analysis of institutional effects and would increase generalizability to a larger FG college-going population.

Related to the limitation of single-institution studies is the delimited FG population of the current study. Nationally, only six percent of FG college students attend highly selective four-year institutions; the majority attend two-year institutions (Engle, 2007; Redford & Hoyer, 2017) due to cost, proximity to home, and the desire to work while attending college (Berkner & Chavez, 1997; Engle, 2007). By institution type, the present study represents only a small fraction of all FG postsecondary enrollees and is thus not representative of the general FG population. Student age also separates FG students in this study from the larger FG population; the mean age in the present study is 18 years while nationally, fewer than 50% of FG students are age 18 and under (Choy, 2001). While this study may have validity for FG students enrolled in highly selective four-year institutions, it is less likely to generalize to those pursuing their studies in other sectors of postsecondary education. This study was also limited to first-year students. While the risk of attrition for FG students is greatest in the first year, the cumulative risk of dropout in succeeding years continues to increase across semesters (Ishitani, 2003). This study does not address the campus experiences, psychological outcomes, and attitudes of FG students in the second and subsequent years, which may differ significantly from those impacting first-year students.

The one-time, cross-sectional survey data collection of this study precludes a longitudinal analysis of reciprocal relationships among environmental interactions, psychological processes and outcomes, and intermediate outcomes as stipulated in the original Bean and Eaton (2000, 2001/2002) model. Theoretically, the outcomes of initial interactions with the institution can lead to adaptation and adjustment which then iteratively feed back to experiences and interpretations

of institutional interactions. Over time through this dynamic process, the student may gain confidence and motivation, facilitating persistence (Bean & Eaton, 2000). While Bean and Eaton (2001/2002) allow that these processes may be regarded as linear—as treated in the present study—they are likely to be reciprocal. A longitudinal design including multiple waves of survey data collection across years—including semesters more proximal to graduation outcomes—would enable analysis of the extent and direction of reciprocal processes over time. Such a design would have the potential to yield a richer understanding of the institutional environment as experienced and reacted to by students at varying points in their careers—and how these dynamics impact retention and graduation.

Another limitation relates to the treatment of demographic variables. This study groups various racial/ethnic identities into an omnibus, student of color category. While the relatively small counts within racial/ethnic identities precluded separate analyses by these individual identities, use of a general category underacknowledges the diversity and college experiences of study participants sharing a particular racial/ethnic identity. It is possible that results relating to students of color as defined in this study do not equally apply to all constituent racial/ethnic identities subsumed within this designation. Additionally, FG students in this study are defined as those whose parents have not attained a bachelor's or higher degree. However, it is possible that some participants have siblings or nearby extended family members with a bachelor's—or greater—level of degree attainment. If so, it is possible that such a circumstance may confer privilege or advantage, affecting survey responses or academic performance. Finally, gender is not addressed in the current study. While outside the scope of the study, FG students' gender identity may impact FG students' interactions, experiences, and outcomes.

Future Research

This study demonstrated and supported use of the Bean and Eaton (2000, 2001/2002) psychological framework to model and study FG college student persistence at a large, prestigious, private, residential institution. The results of the study clarify how campus interactions and experiences—including those related to climate—impact psychological outcomes and operate through attitudes and intention to impact retention and graduation. Future replication of the study at similar institutions would furnish additional evidence about the generalizability of the results. However, as an application and test of the Bean and Eaton framework, the current study and its findings are circumscribed by its setting, cross-sectional survey data collection, and specific population studied. As such, this study's context and findings serve as a springboard for future research to extend this line of inquiry in other, novel directions.

This study is one of relatively few that utilize the Bean and Eaton (2000, 2001/2002) framework for studying persistence. The results of this and similar (e.g., Johnson et al., 2014) research indicating the viability and suitability of the framework for studying the impacts of psychological and other factors on FG student persistence warrants broader application of the model for future research—especially for discrete or underserved populations whose college experiences may be unique. For example, while this study focused on FG students at a particular type of postsecondary institution, additional research could use the framework to explore how campus climates, experiences, and psychological dimensions relate to persistence for students of various identities including race and ethnicity, ability and ableness, gender identity, sexual orientation, and religion. A focus on specific demographic populations (e.g., low-income; international students) could also identify factors that facilitate or hamper success specific to these groups, leading to programs or supports that improve persistence and close gaps in

retention and graduation rates. Elaboration or modification of the Bean and Eaton (2000, 2001/2002) model for application to specific populations of students—e.g., Rodgers and Summers' (2008) adaptation of the model for studying the persistence of African-American students at PWIs—may be undertaken to render it more sensitive for capturing theoretical and experiential aspects relevant to such groups.

Due to its comprehensiveness and suitability for identifying conditional impacts of variables on persistence, future research would benefit from applying the Bean and Eaton (2000, 2001/2002) framework for further study of direct and indirect factors relating to FG student retention and graduation. Although there exists a substantial body of research on FG college student persistence as impacted by entry characteristics, in-college experiences, and psychological outcomes few studies integrate all these factors into their research designs (Martinez et al., 2009). The present study accomplished such an analysis and in doing so, found evidence that psychological outcomes and attitudes mediate connections between experiences and persistence outcomes. While some studies explicitly utilize mediation analysis for exploring correlates of FG student persistence (e.g., Martinez et al., 2009) or adopt similar methodology for studying FG student outcomes (e.g., Aspelmeier et al., 2012), the mediating role of psychological factors found in this study warrants further research to discern if and how psychological processes and outcomes operate more generally across research contexts or populations—or operate in other theoretical retention frameworks—as conditional and/or direct effects on persistence. For example, it may be proposed theoretically and shown empirically that students' unsatisfactory experiences can be mitigated through interventions that reduce stress and increase psychological wellbeing, increasing institutional commitment and the likelihood of persistence. Research conducted to shed light upon such questions, using a comprehensive

framework, necessitates collection of data that can speak to each of experiences, psychological outcomes, attitudes, and persistence.

Like the theoretical retention models that preceded it, the Bean and Eaton (2000, 2001/2002) model—as well as the modified one used in the present study—are longitudinal, suggesting a sequence of factors, events, and outcomes that ultimately impact persistence (Bean & Eaton, 2001/2002). Additionally, the Bean and Eaton (2000, 2001/2002) model stipulates the existence of feedback loops—from intermediate outcomes back to psychological processes and outcomes, and from both factors back to environmental interactions—that mediate how students experience the college environment. The longitudinal or feedback aspects of models are, ideally, tested through collection of data at multiple points in time (Krathwohl, 1998) and analyzed through appropriate statistical methods (Loehlin, 1992). However, most studies examining longitudinal phenomena are conducted applying a cross-sectional research design (Krathwohl, 1998). Though some studies of college student retention employ a hybrid approach as this study does (i.e., the collection of academic performance and persistence outcomes at multiple points in time, and survey data at one point in time (e.g., Burgette, & Magun-Jackson, 2008/2009; Johnson et al., 2014)), collection of data at multiple points in time provides a stronger test of—and evidentiary basis for answering—longitudinally-focused research questions (Loehlin, 1992). Greater adoption of longitudinal data collection—despite its greater costs (Krathwohl, 1998)—could provide stronger evidence when testing the persistence impacts of time-varying predictors.

This study found negative, direct and indirect impacts of family stress on outcomes, as a function of campus environmental interactions. However, family-related experiences and interactions external to campus may also positively or negatively impact levels of anxiety (Bryan & Simmons, 2009; Gibbons, 2019). While a focus of this study was on FG students' campus

experiences—measured in this study through several factors—much less information was collected about their off-campus experiences—specifically, with family members. FG students perceiving their families as caring and supportive feel less stress and greater emotional support than those viewing their families as unsupportive (Gibbons, 2019; Wang & Castañeda-Sound, 2008), and students’ responsibilities to their families while attending college—while often taxing and stressful—can also confer strength, ability, and agency that facilitate college success (Covarrubias et al., 2019). Future research applying the Bean and Eaton (2000, 2001/2002) framework to study FG student persistence—including measures of the types and character of family interactions—may further elucidate the ways in which such interactions can impact psychological outcomes, institutional commitment, and persistence.

In all three models, high school GPA was the strongest predictor of SAP after the first semester. It was also the only predictor of first-semester SAP appearing in all three models. Because early-college SAP is a strong predictor of subsequent SAP and persistence, this study showed that HSGPA affords early prediction of college academic performance. However, college academic performance is also positively related to high school curricular rigor (Choy, 2001; Pike & Saupe, 2002; Warburton et al., 2001), suggesting that data on specific high school courses taken by FG students could improve prediction of college grades and possibly pinpoint subject matter areas in which FG students may struggle in college. This would allow faculty and staff to identify—early and proactively—these academic areas, for student intervention and support. While high school course information was not available in the present study, future research should include specific high school course and grade information—where available—to further explore and establish links between high school course performance and FG student success in college courses. Additionally, given the importance of early-college academic

progress for retention and graduation, researchers and institutions should also account for it in models and studies of persistence.

In all three models in this study, mediation—when “one or more intervening variables [are] located causally between X and Y” (Hayes, 2018, p. 7)—was a recurring theme. The direction and intensity of resilience’s impact on persistence was conditioned on student experiences and the psychological consequences of those experiences, suggesting a qualification to prior studies finding a direct link between resilience and persistence (e.g., Duckworth et al., 2007; Duckworth & Quinn, 2009; Pascarella & Chapman, 1983). The impacts of environmental interactions on attitudes, intentions, and behavior were also subject to mediation by psychological outcomes—providing evidence that the integrationist framework (e.g., Tinto, 1975, 1993) is incomplete without an accounting of students’ psychological outcomes resulting from—and mediating the impacts of—their campus experiences. While the Bean and Eaton (2000, 2001/2002) framework stipulates mediation, the results of this study lend empirical support to the model and the theory behind it. The prevalence of mediation seen in the results of this study positions it as an important theme in theorizing and studying persistence. Future theory-driven research should explore and test for mediation in existing persistence models, with results potentially leading to theory elaboration—and generating implications for practice as well.

In the current study, all participants were first-time postsecondary students. Students not persisting or graduating at the institution of study were not tracked further; their enrollment or graduation at other higher education institutions was not followed. However, resources are available that enable tracking of individual student enrollment and graduation across institutions. One such outfit is the National Student Clearinghouse[®] (NSC), which contains postsecondary

enrollment and graduation data across types of institutions including 2- and 4-year, and public and private. Studies on FG student persistence have employed the NSC to understand cross-institution enrollment and graduation, linking these patterns to individual characteristics such as academic readiness for college and enrollment intensity in college (e.g., Radunzel, 2018). However, little if any research has examined student institutional departure—and subsequent enrollment elsewhere, or systemic departure—in relations to campus environmental interactions and climate, or psychological outcomes. Future research could utilize the NSC to understand, for example, if FG students experiencing a hostile racial climate or suffering specific sources of stress at prestigious PWIs subsequently enroll at similar or different types of institution, pause their studies before returning, or leave higher education altogether. In concert with collection of data on individual students' campus experiences, such efforts would provide a more thorough picture of students' ultimate persistence outcomes as impacted by such experiences.

Summary and Conclusion

FG students' stated reasons for pursuing a college education include securing a good-paying job with a commensurate lifestyle and providing opportunity for their children (Darling & Smith, 2007; Longwell-Grice, 2003; Longwell-Grice et al., 2016; Nuñez & Cuccaro-Alamin, 1998). Graduates from more-selective institutions enjoy higher job salaries than those graduating from less-selective institutions (Carnevale & Rose, 2003; Witteveen & Attewell, 2017). The relatively low graduation rate of FG students enrolling at selective private institutions is a significant barrier to their goals and aspirations, yet little research has probed this problem through a comprehensive theoretical lens and a rich set of data. This study employed a modified version of the Bean and Eaton (2000, 2001/2002) psychological model of college student retention to investigate student entry characteristics, and experiential and psychological factors,

related to actual FG student retention and graduation at a large, private, selective, residential university. The investigation provided support for the theoretical model, showing that FG students' entry characteristics and their interactions on campus impacted both their feelings about the institution and their levels of stress. These factors then impacted their attitudes towards the institution and their intent to persist, which along with SAP impacted their actual persistence. The results of the study pointed to several implications for practice for potentially increasing FG persistence at prestigious private residential institutions, and suggested several avenues for future research. Perhaps most importantly, the study demonstrates how educators and institutions can examine, learn from, and support their FG students who stand to benefit and prosper from their attention and caring.

**Appendix 1: The SUSES Survey
(following pages)**

SU Student Experience Survey

This paper survey is being distributed by the Syracuse University Office of Institutional Research and Assessment (OIRA@syr.edu). The survey can also be completed online at:

<https://oira.syr.edu/suses/>

You may enter the survey web site by logging in with your SUID and netID.

The SU Student Experience Survey has several sections, and you may complete them in whatever order you wish.

Section	Page
Racial/Ethnic Identity	1
Classroom Experiences	2
Experiences in Your Major	3
Peer Interactions	5
Campus Environment	6
Institutional Practices	7
Choosing SU	8
Sources of Stress and Support at SU	8
Staying at SU	10
Final Demographic Questions	11

Please place your completed survey and informed consent form in the enclosed return envelope, seal it, and give it to your RA this week.

Before starting the survey, please review the research study information provided on the next page. Participation in this survey effort is voluntary. Your responses will be confidential and only group data are reported.

Thank you. We appreciate your time and effort.



Office of Institutional Research and Assessment

Participation in the **SU Student Experience Survey** involves completing a survey, which will take approximately 15 minutes of your time. *Your participation is voluntary, and there is no penalty if you choose not to participate. You may withdraw at any time without prejudice.* All survey responses are *confidential*. Only group data will be reported, and no individual names will be included in any reports, publications, or presentations of results.

The benefit of this research is that you will be helping us to better understand the campus experiences of students across a variety of demographic variables (e.g., racial/ethnic identity, gender, academic class level, etc.). The survey results will help inform the University as it strives for continued improvement of the undergraduate experience. The risks to you of participating in this study are minimal, and they will be reduced by ensuring confidentiality of your responses.

If you have any questions or concerns about this study, please contact the investigators, Dr. Dawn Johnson in the School of Education (315-443-4763 or drjohn02@syr.edu) or Dr. Barbara Yonai in the Office of Institutional Research and Assessment (315-443-8700 or bayonai@syr.edu). You may also contact the Syracuse University Institutional Review Board (315-443-3013 or orip@syr.edu) with questions about your rights as a research participant, if you have questions, concerns, or complaints that you wish to address to someone other than the investigators, or if you cannot reach the investigators listed above.

If you have read this form, are 18 years or older, and agree to take part in this study, please continue with the survey on the next page. Please sign one copy of this informed consent form and return it with your completed survey in the accompanying envelope. Please keep the second copy of the consent form for your records.

Student signature _____ Date _____

To help us understand the experiences of various groups of students, please describe yourself using the following categories. Your responses will remain confidential and only group data will be reported.

How would you describe your racial/ethnic identity? (Choose all that apply. If the following categories do not apply to you, please describe yourself using the "other" category.)

- Arab/Arab American
 - Egyptian
 - Iraqi
 - Lebanese
 - Palestinian
 - Syrian
 - Arab/Arabic
 - Middle Eastern
 - Persian
 - Other Arab American/Arab
- Asian/Asian American
 - Cambodian
 - Chinese
 - Taiwanese
 - Japanese
 - Hmong
 - Laotian
 - Bangladeshi
 - Indonesian
 - Sri Lankan
 - Indian
 - Korean
 - Malaysian
 - Pakistani
 - Thai
 - Filipino
 - Vietnamese
 - Other Asian American/Asian
- Black/African American
 - African American
 - Ethiopian
 - Ghanaian
 - Nigerian
 - South African
 - Other African
 - Haitian
 - Jamaican
 - Trinidadian
 - Other West Indian
 - Other Black
- Latino/a
 - Cuban
 - Dominican
 - Puerto Rican
 - Central American
 - Mexican-American/Chicano
 - South American
 - Afro-Latino/a
 - Asian-Latino/a
 - Hispanic
 - Other Latino/a
- Native American/American Indian/Alaska Native
 - (Please specify tribe: _____)
- Native Hawaiian/Pacific Islander
 - Filipino
 - Samoan
 - Tongan
 - Guamanian/Chamorro
 - Fijian
 - Other Native Hawaiian/Pacific Islander
- White/Caucasian
 - Australian
 - British
 - Canadian
 - French
 - German
 - Irish
 - Italian
 - Polish
 - Russian
 - Scottish
 - Other European
 - Other White/Caucasian
- Other (please specify: _____)
- Prefer not to respond

Are you an international student?

- Yes
- No

Classroom Experiences

What is your academic class level?

- First-year Senior
 Sophomore Fifth-year senior
 Junior

Thinking about **all of your classroom experiences so far at SU**, for each of the following statements, please select the response option that best represents your experience.

	Not Applicable	Never	Rarely	Sometimes	Often	Very Often
In my classes, I am treated with respect by:						
-- instructors	0	1	2	3	4	5
-- other students	0	1	2	3	4	5
I feel comfortable:						
-- participating in class	0	1	2	3	4	5
-- asking an instructor for help if I do not understand course-related material	0	1	2	3	4	5
-- asking another student for help if I do not understand course-related material	0	1	2	3	4	5
-- discussing personal issues that could impact my academic success with my instructors	0	1	2	3	4	5
-- interacting with instructors of the same racial/ethnic background as my own	0	1	2	3	4	5
-- interacting with instructors of different racial/ethnic backgrounds from my own	0	1	2	3	4	5
I have observed:						
-- instructors directing discriminatory words, behaviors, or gestures at students of color in my class	0	1	2	3	4	5
-- students directing discriminatory words, behaviors, or gestures at students of color in my class	0	1	2	3	4	5
I have encountered racial/ethnic stereotypes about my academic ability from my instructors	0	1	2	3	4	5
I have felt unwelcomed by classmates on course project assignments because of my race/ethnicity	0	1	2	3	4	5

To what extent do your instructors and/or classmates expect you to act as a spokesperson or representative of your racial/ethnic group in the classroom?

- Never
 Rarely
 Sometimes
 Often
 Very Often

To what extent has this role affected you, if at all?

- The role is unacceptable.
 It is a burden to play the role.
 It is inconvenient, but I cope.
 It is not a problem for me.
 I welcome playing the role.

Please provide comments that will help us better understand your experiences in the classroom.

Experiences in Your Major

Do you currently have more than one major?

- Yes
 No

► Please use the "Major 1" column to indicate in which school/college your major is located. *If you have more than one major, use the "Major 2" column to mark your second school/college.*

Major 1	Major 2	
<input type="checkbox"/>	<input type="checkbox"/>	School of Architecture
<input type="checkbox"/>	<input type="checkbox"/>	The College of Arts and Sciences
<input type="checkbox"/>	<input type="checkbox"/>	School of Education
<input type="checkbox"/>	<input type="checkbox"/>	L.C. Smith College of Engineering and Computer Science
<input type="checkbox"/>	<input type="checkbox"/>	The College of Human Ecology
<input type="checkbox"/>	<input type="checkbox"/>	School of Information Studies
<input type="checkbox"/>	<input type="checkbox"/>	The Martin J. Whitman School of Management
<input type="checkbox"/>	<input type="checkbox"/>	S.I. Newhouse School of Public Communications
<input type="checkbox"/>	<input type="checkbox"/>	College of Visual and Performing Arts
<input type="checkbox"/>	<input type="checkbox"/>	University College

For each of the following statements, please select the response option that best represents **your experience in your current major**. *If you have more than one major, select one of the majors and answer the following questions with that major in mind.*

	Never	Rarely	Sometimes	Often	Very Often
I feel supported by <i>instructors in my major</i>	1	2	3	4	5
I feel comfortable:					
-- participating in classes in my major	1	2	3	4	5
-- asking <i>instructors in my major</i> for help if I do not understand course-related material	1	2	3	4	5
-- asking other students in my major for help if I do not understand course-related material	1	2	3	4	5
I have observed:					
-- <i>instructors in my major</i> directing discriminatory words, behaviors, or gestures at students of color in my class	1	2	3	4	5
-- students in my major directing discriminatory words, behaviors, or gestures at students of color in my class	1	2	3	4	5
I have encountered racial/ethnic stereotypes about my academic ability from <i>instructors in my major</i>	1	2	3	4	5
Instructors in my major encourage me to pursue or continue in my major	1	2	3	4	5
<i>Instructors in my major</i> have mentored me about how to succeed in my major	1	2	3	4	5
Instructors in my major inform me about opportunities for work or research opportunities	1	2	3	4	5
I feel comfortable discussing career plans with <i>instructors in my major</i>	1	2	3	4	5

Have you changed your major at SU?

- Yes
- No
- No, but I have seriously considered changing my major

► **If you have changed your major or considered changing it, please continue with the next question. If you have not changed your major, please continue with the question below the box.**

What were your reasons for changing your major **OR** considering a change in major? (Choose all that apply.)

- Major was not my first choice
- Lack of confidence that I could succeed in the major
- Academically unprepared for major
- Coursework required too much time
- Coursework was too difficult
- Loss of interest in the subject matter
- Poor academic performance
- Students were too competitive
- Could not get classes I needed for my major
- Inadequate advising
- Discouraged by instructors to continue in the major
- Difficult interactions with teaching assistants (TAs)
- Negative classroom environment
- Negative department environment
- Poor teaching
- Course materials were too expensive
- Financially unable to participate in internships and other opportunities
- Unanticipated costs associated with my major
- Time to complete degree was too long
- Do not want to do the kind of work associated with this major
- Fewer job opportunities available in my field due to the economy
- Unsure of what jobs are available for graduates of this major
- Pressure from my family
- Other (please specify: _____)

Please provide comments that will help us better understand your experiences in your major(s). *If you have more than one major or have changed your major, please be as descriptive as possible in your comments so that we may understand what major you are referencing.*

Peer Interactions

Please use the following scale for the next question:

- 0=No opportunity to do so (N/A) 3=Sometimes (Some)
 1=Never (Nev) 4=Often (OfT)
 2=Rarely (Rare) 5=Very Often (V OfT)

To what extent have you done the following:

OfT	with students from <i>my racial/ethnic group</i>						with students from <i>different racial/ethnic groups</i>					
	N/A	Nev	Rare	Some	OfT	V OfT	N/A	Nev	Rare	Some	OfT	V
Worked on a class project/assignment	0	1	2	3	4	5	0	1	2	3	4	5
Studied informally	0	1	2	3	4	5	0	1	2	3	4	5
Shared a meal	0	1	2	3	4	5	0	1	2	3	4	5
Spent free time together (i.e., hang out)	0	1	2	3	4	5	0	1	2	3	4	5
Went out socially	0	1	2	3	4	5	0	1	2	3	4	5
Attended campus activities	0	1	2	3	4	5	0	1	2	3	4	5
Had intellectual discussions outside of class	0	1	2	3	4	5	0	1	2	3	4	5
Shared personal feelings and problems	0	1	2	3	4	5	0	1	2	3	4	5
Had meaningful discussions about race relations outside of class	0	1	2	3	4	5	0	1	2	3	4	5

Please indicate your level of agreement with each of the following statements.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in:					
-- my living environment	1	2	3	4	5
-- the classroom	1	2	3	4	5
-- clubs and organizations	1	2	3	4	5
-- campus activities	1	2	3	4	5
-- informal social activities	1	2	3	4	5
It is important for me to interact with students from different racial/ethnic backgrounds	1	2	3	4	5
At times it is important for me to be with people of my own racial/ethnic group	1	2	3	4	5
Since coming to college, I have learned a great deal about:					
-- my own racial/ethnic group	1	2	3	4	5
-- other racial/ethnic groups	1	2	3	4	5
I have gained a greater commitment to my racial/ethnic identity since coming to college	1	2	3	4	5

Where are you currently living?

- North (Main) Campus residence hall
- Skyhalls
- South Campus apartments
- University Village apartments
- Sorority/fraternity house
- Off campus, living by myself
- Off campus, living with friends
- Off campus, living with family
- Other (please specify: _____)

For each of the following statements, please select the response option that best represents **your residence hall experience**.

	Not Applicable	Never	Rarely	Sometimes	Often	Very Often
I have been treated with respect by:						
-- other residents	0	1	2	3	4	5
-- resident advisors (RAs)	0	1	2	3	4	5
I feel comfortable living around students from different racial/ethnic backgrounds.....	0	1	2	3	4	5
I have observed:						
-- residents directing discriminatory words, behaviors, or gestures at students of color.....	0	1	2	3	4	5
-- resident advisors (RAs) directing discriminatory words, behaviors, or gestures at students of color....	0	1	2	3	4	5
I have encountered racial/ethnic stereotypes where I live..	0	1	2	3	4	5
I have felt unwelcomed where I live because of my race/ethnicity	0	1	2	3	4	5

Please mark the box closest to the word that describes generally how you feel *in your living environment* during **this academic year**.

Uncomfortable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comfortable
Unsafe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safe
Isolated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Connected
Disrespected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Respected
Segregated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Integrated

Please provide comments that will help us better understand your experiences interacting with other students on campus.

Campus Environment

Please mark the box closest to the word that describes the **campus environment** from your point of view.

Hostile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Friendly
Disrespectful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Respectful
Insensitive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sensitive
Unsupportive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Supportive
Segregated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Integrated

Please mark the box closest to the word that describes **generally how you feel on campus**.

Uncomfortable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comfortable
Unsafe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Safe
Isolated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Connected
Discouraged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Encouraged
Unwelcomed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Welcomed

Please describe one or more experiences you have had with student(s), staff, faculty, or an office/department at the University where the issue was centered on race, ethnicity, or culture.

Positive experiences:

Negative experiences:

Institutional Practices

Please indicate your level of agreement with each of the following statements.

	Do not Know	Strongly Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
The University is committed to having a:					
-- racially and ethnically diverse student body	0	1	2	3	4
-- racially and ethnically diverse faculty	0	1	2	3	4
-- racially and ethnically diverse staff/administration	0	1	2	3	4
The University provides opportunities:					
-- to develop an understanding and appreciation of human diversity	0	1	2	3	4
-- for interaction among students from different racial/ethnic backgrounds	0	1	2	3	4
The University puts too much emphasis on the differences between racial/ethnic groups	0	1	2	3	4
The University's procedures for dealing with racial/ethnic bias on campus are:					
-- visible	0	1	2	3	4
-- effective	0	1	2	3	4

Please provide recommendations for strengthening the diversity and cultural competence of Syracuse University.

Coming to and Staying at SU

Choosing SU

Was SU your first-choice school?

Yes No

Did you:

- Start at SU
- Transfer from a two-year school/community college
- Transfer from another four-year college/university

Why did you choose SU?

Sources of Stress and Support at SU

When you first started at Syracuse University, what was your level of preparedness for the:

	Not Sure	Very Unprepared	Unprepared	Prepared	Very Prepared
Academic demands.....	0	1	2	3	4
Social environment.....	0	1	2	3	4

During your time at SU, please indicate the level of stress you have experienced in each of the following areas.

	No Stress	Mild Stress	Moderate Stress	Severe Stress
ACADEMICS				
Getting the classes that I need	0	1	2	3
Attending class regularly	0	1	2	3
Academic demands of coursework	0	1	2	3
Grades/GPA	0	1	2	3
Negative classroom environment	0	1	2	3
Poor relations with instructors	0	1	2	3
Making connections with instructors	0	1	2	3
In a major I do not like	0	1	2	3
Difficulty getting the help/advice I need in my school/college	0	1	2	3
Lacking connection to my school/college	0	1	2	3
Planning for life after graduation	0	1	2	3
STUDY SKILLS				
Time management	0	1	2	3
General study skills	0	1	2	3
Math skills	0	1	2	3
Writing skills	0	1	2	3
Language support	0	1	2	3
FINANCIAL				
Finding a job while on campus	0	1	2	3
Working too many hours in one or more jobs	0	1	2	3
Maintaining my GPA to keep scholarship awards	0	1	2	3
Debt load	0	1	2	3
Finances to pay for tuition	0	1	2	3
Finances to pay for expenses associated with my major	0	1	2	3
Finances to pay for other expenses while at SU	0	1	2	3
Finances to pay for travel between home and SU	0	1	2	3
Finding a job after graduation	0	1	2	3

	No Stress	Mild Stress	Moderate Stress	Severe Stress
FAMILY				
My family's financial situation	0	1	2	3
Responsibilities to my family	0	1	2	3
Caring for children	0	1	2	3
Lacking support from my family	0	1	2	3
Family issues or problems	0	1	2	3
Being the first in my family to go to college	0	1	2	3
Pressure from my family about my major/academics	0	1	2	3
CAMPUS LIFE				
Difficulty making friends on campus	0	1	2	3
Difficulty feeling socially accepted on campus	0	1	2	3
Difficulty feeling culturally accepted on campus	0	1	2	3
Difficulty integrating with university life/activities	0	1	2	3
Racial/ethnic separation on campus	0	1	2	3
Insensitivity of staff/administrators	0	1	2	3
Being a student-athlete	0	1	2	3
Being a member of a fraternity or sorority	0	1	2	3
Involvement in student organizations	0	1	2	3
Finding housing	0	1	2	3
RELATIONSHIPS				
Problems with friends	0	1	2	3
Problems with boyfriend/girlfriend	0	1	2	3
Problems with roommate(s)	0	1	2	3
HEALTH AND WELLNESS				
Lacking self-esteem/doubting myself	0	1	2	3
Lack of exercise	0	1	2	3
Overexercising	0	1	2	3
Proper nutrition/diet	0	1	2	3
Sleep issues	0	1	2	3
OTHER (please specify: _____)	0	1	2	3

Please provide comments that will help us better understand your experiences so that we may improve support for students. If you have specific suggestions for how SU may improve, please include those.

What has been helpful to you in your success at SU?

Staying at SU

Have you ever thought of leaving SU?

- Yes
- No

► If yes, please answer the boxed set of questions. If no, please continue below the box.

When did you consider leaving? (Choose all that apply.)

- During my first year
- During my second year
- During my third year
- During my fourth year

Please tell us about your reasons for considering leaving.

What made you decide to stay at SU?

How important is it to:	Unsure	Very Unimportant	Neither Unimportant Nor Important	Important	Very Important	
you that you graduate from SU.....0	0	1	2	3	4	5
your family that you graduate from SU.....0	0	1	2	3	4	5

If you could start over again, would you choose to attend SU?

- Definitely no
- Probably no
- Probably yes
- Definitely yes

Are you planning to return to SU for the fall 2010 semester?

- Yes
- No, I am graduating
- No, I am studying abroad
- No, I am transferring to another institution (please specify institution: _____)
- No, other reason (please specify: _____)
- Undecided

Please provide any additional comments about your experiences at Syracuse University.

To understand if we are meeting the needs of various groups of students, we would appreciate your response to the following items. Your responses will remain confidential and only group data will be reported.

What is your gender?

- Female
- Male
- Transgender
- Prefer not to respond

Please indicate how you primarily identify with respect to sexual orientation.

- Bisexual
- Gay
- Heterosexual
- Lesbian
- Questioning
- Prefer not to respond

What is the highest level of education completed by one or both of your parents or guardians?

- | <i>Mother/
female guardian</i> | <i>Father/
male guardian</i> | |
|------------------------------------|----------------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Do not know |
| <input type="checkbox"/> | <input type="checkbox"/> | Did not finish high school |
| <input type="checkbox"/> | <input type="checkbox"/> | Graduated from high school/GED |
| <input type="checkbox"/> | <input type="checkbox"/> | Attended college but did not complete degree |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed an associate's degree |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed a bachelor's degree |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed a master's degree |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed a doctoral degree (e.g., Ph.D., Ed.D., J.D., M.D.) |

Is English your primary language at home?

- Yes
- No (Please specify language: _____)

Thank you for completing this survey. Your input is very important to us.

Appendix 2: SUSES Survey First Reminder

Dear Student:

Recently you received an email asking you to participate in a study of student experiences on campus. Please help us in this effort by completing an online survey, the results of which will provide Syracuse University with a better understanding of the campus experience, with a focus on issues of race and ethnicity.

We would like to hear from as many students as possible, so please take 15 minutes to share your perceptions with us.

Please click on the following link to complete the *SU Student Experience Survey*:

[survey link]

On the login page, enter the passcode listed below and click submit to start the survey.

[pass code]

Participation is completely voluntary. Your responses will be strictly confidential, and no connection will be made between you and your responses.

If you have any questions or concerns about this study, please contact the Syracuse University Office of Institutional Research and Assessment (315-443-8700 or OIRA@syr.edu).

Thank you in advance for your time and effort.

Appendix 3: SUSES Survey Second Reminder

"...campus diversity is everyone's business."

- The Diversity Factor (2007)

What's your experience?
We want to know.

Dear [first name]:

We need your help! Please take 15 minutes to complete the online *SU Student Experience Survey (campus diversity survey)*:

<https://oira.syr.edu/suses/>

You can log in to the survey web site using your SUID and netID.

We would like to hear from as many students as possible, so please take some time to share your perceptions. **Thank you.**

Questions? Please contact the Office of Institutional Research and Assessment (oira@syr.edu).

Appendix 4: SUSES Survey Final Reminder

"...campus diversity is everyone's business."

- The Diversity Factor (2007)

What's your experience?
We want to know.

We need your help! Please take 15 minutes to complete the online *SU Student Experience Survey (campus diversity survey)*. **If you have already begun the survey, but did not complete it, use the table of contents to finish additional survey sections.**

<https://oir.syr.edu/suses/>

You can log in to the survey web site using your SUID and netID.

We would like to hear from as many students as possible, so please take some time to share your perceptions. **Thank you.**

Questions? Please contact the Office of Institutional Research and Assessment (oir@syr.edu).

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Timothy H. Wasserman

Education

College of Arts and Sciences, Syracuse University, Syracuse, New York
Master of Science, June, 1998
Major: Applied Statistics

College of Arts and Sciences, Syracuse University, Syracuse, New York
Bachelor of Science, December, 1988
Major: Psychology

Experience

7/02-Present *Assistant Director*– Office of Institutional Research, Syracuse University, Syracuse, NY

12/99-6/02 *Research Analyst* - Center for Support of Teaching and Learning, Syracuse University, Syracuse, NY

7/96-11/99 *Technical Specialist II* - Center for Instructional Development, Syracuse University, Syracuse, NY

10/93-6/96 *Programmer/Analyst* - Center for Instructional Development

- Supervise staff who support assessment, reporting, and decision-making
- Developed, implemented, and maintain admissions yield predictive models
- Describe, summarize, and analyze survey, observational, and experimental data by authoring SAS statistical software programs
- Provide statistical methods advice and insight for institutional research staff including program evaluation and survey efforts
- Furnish University with official data on student persistence and graduation rates
- Provide various University offices with longitudinal student records unit or aggregated data that capture students' academic performance, persistence, and graduation outcomes
- Assist graduate interns with quantitative data analysis
- Teach SAS and statistics to new and longstanding staff as part of their professional development

1/93-Present *Statistical/Research Consultant & Private Tutor* - Self Employed, Syracuse, NY

- Assist local telecommunications business with market research survey processing
- Assist Syracuse University and SUNY ESF faculty in analyzing quantitative research data in many areas including education, social science, and forestry

- Aid forestry service in estimating value of timber in various forest stands using statistical methodology
- Write SAS and other software programs to facilitate data analysis
- Tutor students in a variety of undergraduate and graduate statistics courses
- Aid graduate students in analyzing and interpreting research data

8/98-12/98

Instructor - School of Education, Syracuse University, Syracuse, NY

1/91-5/93

Teaching Assistant - Department of Psychology, Syracuse University, Syracuse, NY

- Taught a joint graduate/undergraduate introductory statistics course
- Handled all course activities- lectures, writing exams, grading, holding office hours
- Tutored students enrolled in advanced graduate level statistics courses
- Provided research consulting for psychology graduate students

9/89-12/90

Tutor - Center for Academic Achievement, Syracuse University, Syracuse, NY

- Tutored undergraduates in introductory statistics course as well as other, substantive psychology courses

Other Experience

11/88-11/08

Election Inspector - Onondaga County Board of Elections, Syracuse, NY

- Operate a public polling place in the 17th Ward, 8th district
- Tabulate votes and ensure proper legal procedures are followed

Publications and Presentations

- Townsend, J. M., Jonason, P. K. & Wasserman, T. H. (2019). Associations between motives for casual sex, depression, self-esteem, and sexual victimization. *Archives of Sexual Behavior*. <https://doi.org/10.1007/s10508-019-01482-3>
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- Wasserman, T., Johnson, D. R., Yonai, B., & Yildirim, N. (2011). *The Impact of Academic, Financial, Family, and Personal Stressors on GPA and Persistence of Racially/Ethnically Diverse First- and Second-Year College Students*. Paper presented at the 2011 AIR Forum: Passport to New Ideas, Better Decisions. Toronto, Ontario.
- Yildirim, N. & Wasserman, T. (2011). *Supplementary Factor Analysis of NSSE Data*. Paper presented at the 2011 AIR Forum: Passport to New Ideas, Better Decisions. Toronto, Ontario.
- Yonai, B., & Wasserman, T. (2011). *Making Technology Work for Your Institutional Reporting Needs: Three Systems for Collecting and Reporting Institutional Data for Guidebooks, Internal Audiences, and External Constituencies*. Paper presented at the 2011 AIR Forum: Passport to New Ideas, Better Decisions. Toronto, Ontario.
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- Grove, W. A. & Wasserman, T. (2004). The Life-Cycle Pattern of Collegiate GPA: Longitudinal Cohort Analysis and Grade Inflation. *Journal of Economic Education* (Spring 2004) 35:2, 162-174.
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- Wasserman, T. & Guley, O. (1999). *Assessment Collaborations: SAS as a tool in quantitative analysis*. Poster session presented at the 15th Annual Northeast Regional Conference of the National Academic Advising Association (NACADA), Syracuse, NY.
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