

A Comparative Study of International Student Engagement and Success Based on
Race/Ethnicity, Gender, and Institutional Type

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Dedication

This dissertation is dedicated to my wife, Rene, and my children: Carrington, Kayanna, and Kristen.

Abstract

The study examined international students' engagement and success using NSSE 2007 data. The sample consisted of 1996 first years and 2158 seniors. These students were compared by race/ethnicity, gender, and institutional type. The study found that students' engagement differed by race/ethnicity as well as type of institution. The null hypotheses were rejected at $p < .001$. Blacks and Hispanics, more so than other racial/ethnic groups, exhibited different levels of success especially when using engagement and satisfaction as predictors. Males, more than females, were engaged in enriching educational experiences. Overall, institutions that are serious about improving international student success are encouraged to engage these students in meaningful on campus activities and cater to them as separate groups rather than a homogenous group.

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CHAPTER 1

Decades of college impact studies have emphasized different aspects of the undergraduate experience to determine the areas that matter during college (Kuh, 2001a, Astin, 1993). Several studies have focused on the responsibilities of students while others have focused on the role of the institution. More contemporary studies have focused on a hybrid of the students' responsibilities and the roles of the institution to determine what works best for students. The concept of student engagement provides a more comprehensive explanation of the relationship between students and institutions in creating desirable outcomes (Kuh, 2001a). Studies that examine student engagement have sought to establish a relationship with learning and other desirable outcomes. The evidence from these studies is overwhelming and has led to a growing number of institutions attempting to increase the levels of engagement among their students through program and curriculum enrichment (NSSE, 2011). Interestingly, much of that research has been based on domestic college students in the United States or the undergraduate student population as a homogenous group, ignoring the differential experiences of different groups of students (Joo, 2002). In this study, the aim is to focus on international student engagement in the United States and examine its relationship with race and ethnicity, gender, and institutional type. This research will contribute to the knowledge of engagement among diverse populations of students by isolating international students as a unique subpopulation.

Among other factors, globalization and internationalization are central to the efforts and directions of contemporary higher education in the United States (Kritz,

2006). These two broad concepts, therefore, provide the context for this study. With the prominence given to globalization and internationalization in higher education, it is important to define and characterize each of these concepts to ensure a common understanding of the use of the terms. Further, it is even more important to establish the relationship between these concepts, and to show their connections to this study of international students.

Globalization and internationalization, sometimes used interchangeably, represent independent but related ideas (Altbach & Knight, 2007; Knight, 2004). For the purposes of this research, I define globalization as the worldwide system that allows the easy flow of information and communication through technologically-enabled mechanisms to enhance trade and business relations among multiple international organizations, institutions, and agencies (Kritz, 2006; Miller, 2005). I define internationalization as the efforts exerted by organizations and institutions—in the context of this research, higher education institutions—in meeting the demands and realities of a global marketplace and a larger interconnected community (Knight, 2004). These terms, therefore, are neither synonymous nor mutually exclusive but rather one is a response to the other.

Conceptually, globalization is the stimulus that solicits the act of internationalization (Knight, 2004). To better understand the influence of both phenomena, I will explore their roles in higher education in the United States.

With globalization, countries of the world have been able to communicate and compete with each other. This has become more possible as a result of the move towards a borderless society both in an economical and technological sense; individuals can learn

and do business with others from anywhere in the world. Trans-national trading of goods and services has made it difficult for locals in one country (usually a developing country) to compete without the requisite skills and knowledge to provide a comparative advantage to the local country (Bourne, 2005). Another result of globalization is the increased mobility of highly-educated individuals seeking better economic opportunities, otherwise known as migration (World Bank, 2000). This out-migration of the educated from less developed countries to more developed countries results in a negative effect on the economic growth of the country of origin because the earning and productive potentials of those individuals are redirected to other countries (World Bank, 2005). The typical movement of people is from south to north where most of the wealth and resources are concentrated (Altbach & Knight, 2007). The reality of globalization, therefore, is “greater competition, relentless pressures to innovate, new worldwide markets and production options, [and] growing concerns over cultural and environmental degradation” (Wood, n.d., para. 6).

A major impact of globalization on education, particularly higher education, is the mobility of students across borders. Altbach and Knight (2007) described four options institutions can pursue in engaging globalization: cross-border supply, consumption abroad, commercial presence, and presence of natural persons. Cross-border supply involves a provider in one country offering access to courses and programs in another country. This supply is commonly provided through distance learning and e-learning mechanisms. Consumption abroad refers to students leaving their home country and traveling to other countries to study. Foreign students in the host country are called

international students. Commercial presence in a foreign country occurs when a provider establishes a physical facility in that country, for example a secretariat or a branch campus. Some providers have joined with local institutions to offer their programs through collaborative arrangements. Presence of natural persons involves professors, researchers, and other staff traveling to a foreign country to provide various kinds of educational opportunities.

Globalization has created the need for internationalization (Kritz, 2006).

Internationalization has been the response by many institutions as they contend with the reality of globalization. The term internationalization is a complex and evolving concept that has been redefined in ways that allow for a common understanding, particularly in higher education. The confusion around the concept is based on the varied ways in which the term has been used throughout time. Knight (2003) offers a precise and comprehensive definition of internationalization that promotes a multidimensional view of internationalization and its impact at the institutional level. Knight defines internationalization as “the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education” (p. 2). As part of her discussion, she identifies the programmatic strategies most often adopted by institutions as they become more internationalized. Some of these strategies are (a) academic programs that include student exchange initiatives, foreign language study, internationalized curricula, international students, faculty and staff mobility programs, and visiting lectures and scholars; (b) research and scholarly collaboration; (c) domestic and cross-border external relations; and (d) extracurricular engagement (Knight, 2004).

These strategies are implemented in conjunction with organizational strategies that support the overall goal of internationalization, namely in: (a) governance; (b) operations; (c) services that involve institution-wide service units, academic support units, and overall student support services for international and domestic students involved in student exchange or study abroad programs; and (d) human resources.

For some higher education institutions in the United States, the extent of their involvement in internationalization is limited to attracting a small number of international students to add to their diversity efforts on their campuses (Siaya & Hayward, 2003; Stearns, 2009). Their readiness to fully engage and support international students is at the bottom of their priority list (Stearns, 2009). Two reasons contributing to the failure of institutions to engage and support international students are: (a) unfamiliarity with the challenges faced by these students and; (b) the limited research that offers best practices in working with this subpopulation of students.

The findings from a 2003 study conducted by the American Council on Education reveal the attitudes and responses of students as well as institutions in relation to attracting and accommodating international students. According to the report, community colleges had a relatively small number of international students but had experienced increases upwards of 10% within 10 years. Liberal arts colleges actively recruit and provide scholarships for international students but few had full-scale administrative structures and support systems for these students. Comprehensive universities' students were the least likely to participate in study groups with international students. These institutions were also least likely to (a) provide scholarship funds for

international students, and (b) recruit international students. Research universities were the most likely to have dedicated offices with full-time staff to address international education issues, including international students (Siaya & Hayward, 2003).

In each of these institutional types, the undeniable impact of internationalization must be acknowledged, if not embraced, as a transformational force on campuses (Knight, 2004). Internationalization has implications for curricular revision, accommodation of students with language barriers, and costs associated with becoming more internationalized. Given these realities, institutions are forced to restructure their programs and evaluate their outcomes in light of international standards, for example, United Nations Educational Scientific and Cultural Organization (UNESCO) and International Organization for Standardization (ISO9001) standards. These adjustments are in keeping with the move towards a more global society that requires graduates from higher education to become global citizens and to develop competence in working and competing in a global context (Stearns, 2009). Global citizens are those who possess the knowledge and skills in different cultural traditions and institutional frameworks to function in a global environment (Stearns, 2009).

The demands of a global environment necessitate all subpopulations of students to acquire knowledge and skills that will empower them to participate in such a context. This emphasis underscores the need for institutions to become more proactive in understanding and responding to the different subpopulations of students and their needs. All groups of students should feel welcomed and a part of their institutions because of their unique contributions to campus life. International students, in particular, provide

significant contributions not just at the institutional level but to the overall United States' higher education system. Their contributions are to (a) the learning experience of domestic students; (b) the reputation and image of institutions through improved rankings (Pascarella & Terenzini, 2005); and (c) the United States' economy through the payment of out-of-state tuition and fees—a large source of institution and state revenue (National Association for Foreign Student Advisers, 2012).

Although the international student population represents a much smaller group among minority students (all students except White Americans) in the United States higher education system, their impact is quite noticeable. Economically, international students contributed \$21.81 million dollars during the 2011–2012 academic year alone (NAFSA, 2012). International students add to the diversity on campus, the rich cultural experiences, and the diverse perspectives shared among students and faculty (Pandit, 2007; Siaya & Haywood, 2003). For many United States students who have not participated in study abroad programs or taken courses related to cultures other than that of the United States, international students serve as a prime source of rich cultural knowledge and exposure that contributes to the broadened educational experiences of domestic students (Siaya & Haywood, 2003).

Several factors continue to threaten the increase in the numbers of international students in the United States. In spite of those threats, the United States remains the preferred destination for most international students (Institute of International Education, 2012a). This preferred status is being eroded by (a) increased competition from other countries, primarily the United Kingdom and Australia; (b) rising tuition cost—United

States has the highest tuition among higher education systems; (c) and the challenges associated with obtaining a student visa (Scott, 2008). The extent to which these challenges restrict the number of international students to United States campuses should be of concern for many in higher education as well as the government.

According to Pandit (2007), a number of important reasons have been presented for attracting international students to the United States. International students, Pandit argues, have been the leading researchers in Science, Technology, Engineering, and Mathematics (STEM) fields while domestic students have been more interested in business and law. Scientific research and technological advancement therefore depends heavily on international skill and talent. Another reason Pandit cites is the role played by international students as they return to their home countries, serving as ambassadors for United States' culture and helping to improve the image and security of the United States. For universities, international students provide opportunities for domestic students to develop cross-cultural competences or "global competency" (Pandit, 2007, p. 156) and serve as links to international scholarly networks.

In 2007, the number of international students studying in the United States made a significant increase of 7% over 2006, bringing the total to a high of 623,805 (Institute of International Education, 2012a). This was an impressive increase since the international terrorist attack on the United States in 2001. According to Stearns (2009), a combination of fear related to security and "xenophobic American reactions after 9/11" (p. 97) led to a steep decline in international students' enrollment following those attacks. This decline was sustained for the next 5 years until the increase in 2007. Prior to the attacks, the

United States enjoyed a steady increase in international student enrollment from 1954 to 2001. With the current total enrollment of 764,495 international students, this student subpopulation accounts for 3.7% of the total student enrollment in the United States higher education system (Institute of International Education, 2012a). An analysis of the annual percentage change in enrollment of first-time international students revealed that there was a steep decline three years ago to a 1.3% change. Since that time, there has been an upward trend with the most current percentage change at 6.5% over the previous year (Institute of International Education, 2012a).

The Open Doors Report for 2012 indicated that the number of international undergraduate student enrollments at the bachelor's degree level was 309,342 while first-year international undergraduate enrollment stood at 61,772 students (Institute of International Education, 2012b). These enrollment figures represent an increase over academic year 2010–2011 of 6.1% and 18.5% respectively. The percent change in first-year and total bachelor's degree level enrollment suggests new undergraduate students are still coming to the United States in relatively large numbers. International undergraduate students at the bachelor's degree level account for 36% of the overall enrollment of international students in academic year 2011-2012.

Changes in general enrollment of international students by institutional type from 2010–2011 to 2011–2012 reveals 7.9% at doctoral-granting universities (486,906); 3.3% at master's colleges and universities (131,943); and 5.8% (30,334) at baccalaureate colleges (Institute of International Education, 2010c). The top five major fields of study for these students are business and management (21.8%), engineering (18.5%), math and

computer science (9.3%), social sciences (8.7%), and physical and life sciences (8.6%). A little more than half (52.4%) of all international students are from China, India, South Korea, and Saudi Arabia (Institute of International Education, 2012a). The primary source of funding for international students is personal and family funds and accounts for 63.6% of sources of funding. These private funds from international students become major revenue sources at the university, state, and federal levels (Institute of International Education, 2012a; NAFSA, 2012).

One development that created many challenges and tensions for international student service units was the establishment of the Department of Homeland Security that implemented the Students and Exchange Visitor Information System (SEVIS). With the major changes that accompanied the implementation of SEVIS, many institutions' student support service units were ill-prepared to respond appropriately to the new demands and requirements for recruiting and retaining international students. In fact, to comply with the requirements of the system, many institutions shifted resources around in order to develop and maintain the required government documentation and tracking systems (Gillette, 2005; Rosser, Hermsen, Mamiseishvili, & Wood, 2005). It is highly probable that this kind of shifting and restructuring of those offices and job responsibilities resulted in some neglect of international students and their adjustment to the higher education system (Danley, 2010; Read, 2003; Rosser et al., 2005; Siskin, 2004).

These facts about international students in the United States suggest that institutions stand to benefit greatly from a richer, fuller understanding of the needs and

goals of this subpopulation of students. Internationalization, as a result of globalization, demands that institutions assess the challenges and respond to these students, like other groups of students, with specific strategies and policies to enhance their engagement. What is still uncertain is the ways in which international student engagement is influenced by institutional and departmental practices.

Currently, what is known is that many institutions have developed programs and policies geared towards immersing students in activities that have meaningful educational benefits and contribute to the holistic development of students (Kuh, 2005; Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007). Some of the programs that have become popular at various types of four-year institutions include: first-year seminars, orientation, learning communities, academic and career advising, early-warning systems, campus residences, and student support services (Kuh et al., 2007). These programs and services provide opportunities for students to stay connected to their goal of degree completion. Kuh et al. (2007) suggested that as students become more engaged in these activities, they are more likely to be successful in college.

In a study by Zhao, Kuh, and Carini (2005), the researchers compared international students' and domestic students' engagement in effective educational practices using National Survey of Student Engagement (NSSE) 2001 data of 317 four-year institutions where there were 2,780 international students who were compared to 68,480 domestic students. They found that, overall, international students in the United States were more engaged than domestic students. To answer their second research question, which was: "Does the ethnic background of international students shape

student engagement, satisfaction, and gains?" (p. 212), they sliced the data according to race and ethnicity: Black, Asian, White, and Latino. The researchers then conducted a comparison of only three groups because the size of the Latino group was considered too small to yield statistically-significant results.

Zhao et al. (2005) found Asian international students to be less engaged in active and collaborative learning as well as activities related to diversity when compared to Blacks and Whites. Another finding was that Black and White international students were more satisfied with the quality of their campus environment than Asian international students. When compared to Asian international students, Black international students were (a) more engaged in educationally meaningful activities; (b) reported more gains in general education; and (c) were more satisfied overall. Asian international students, however, were more engaged in computer technology as well as relaxing and socializing. Black international first-year students differed from White international first-year students because they had more frequent interactions with faculty and community service. In their senior year, Black international students reported higher scores than Whites except on measures of supportive environment and computer technology usage. White international senior students had higher scores and spent more time in relaxation and socialization than Blacks.

Another less compelling reason for this study is that Zhao et al. (2005) is only one of two studies to date using NSSE data to examine international student engagement based on race and ethnicity. Clearly, more research is needed to confirm and expand what has been discovered about the sub-groups of international students. This study,

therefore, seeks to examine group differences in the international student experience in the United States.

Statement of the Problem

Based on the research by Zhao et al. (2005) that examined the influence of race and ethnicity on engagement, and Siaya and Haywood's (2003) study of the growth of internationalization across institutional type, this study determines the extent of international students' engagement in the academic and social aspects of their undergraduate experience across institutional types in the United States. Further, it seeks to determine the extent to which these students are influenced by institutional factors. In addition, this study seeks to further understandings of the predictive value of institutional factors to the academic attainment, gains in general education, practical competence, and the personal and social development of international students. Given the racial and ethnic diversity within the international student population, it is important to examine differences among these students in their interactions within the college environment (Joo, 2002).

Purpose of This Study

The purpose of this quantitative study is to conduct a comparative analysis of international students' engagement and success based on race and ethnicity and institutional types. The independent variables are race and ethnicity, institutional type, and student satisfaction. The dependent variables are student engagement and student success. Student engagement includes measures of students' perceptions of experiences at their institutions in the areas of (a) level of academic challenge, (b) active and

collaborative learning, (c) student-faculty interactions, and (d) enriching educational experiences. These measures are the benchmarks of engagement as purported by Kuh (2001b). Student success includes measures of (a) self-reported gains in critical outcomes related to growth and learning, and (b) self-reported grade for the academic year. Control variables are age, academic major, living arrangement, enrollment status, transfer, and parents' level of education.

Research Questions and Hypotheses

To make comparisons among different racial/ethnic groups within the international student sub-population, the following research questions and hypotheses will be used to guide the study of engagement and success of these students:

1. How does the engagement of international students in different types of institutions vary based on race or ethnicity and gender?
2. To what extent is there a relationship between engagement and success among international students across racial and ethnic groups?
3. To what extent do institutional factors have a differential relationship with student success for each racial or ethnic group of international students?
4. To what extent do engagement and satisfaction predict international student success across institutional types for each racial or ethnic group?

Null hypothesis 1: There is no difference in the engagement of international students among race or ethnicity and gender across institutional types.

Null hypothesis 2: There is no relationship between engagement and student success across racial or ethnic groups.

Null hypothesis 3: There is no difference in the relationship between institutional factors and student success across racial or ethnic groups.

Null hypothesis 4: There is no difference in the prediction of success for race or ethnicity across institutional type.

Significance of This Study

International students face numerous challenges: cultural shock, language difficulties, and adjustment challenges due to their unfamiliarity with the United States education system and expectations are only a few (Lacina, 2002; Sewall, 2010). These challenges, if not adequately addressed through university resources, could result in negative and disappointing experiences for these students (Peterson, Briggs, Dreasher, Horner, & Nelson, 1999). With the heightened competition from other countries, negative experiences might deter international students from studying in the United States. This study articulates areas for improvement so that institutions can modify programs and policies, and implement strategies to better support and enhance the success of international students on their campuses.

Some important yet understudied aspects of the international student experience to date are the extent to which these students' perceptions of the roles and responsibilities of United States higher education institutions influence their success (Bevis & Lucas, 2007), and how these students' perceptions change for different types of institutions. The primary purpose of empirical studies that examine those kinds of relationships with success should be to further empower student services professionals to better understand and respond to the unique needs and challenges faced by international students. This

study, through its focus on engagement, contributes to the student services professionals' understandings in those areas and enables them to better serve international students.

Several researchers have called for studies that examine the student college experience from the perspectives of different subpopulations of students (Harper & Quaye, 2009; Kuh et al., 2007; Pascarella & Terenzini, 2005; Zhao et al., 2005). This call is consistent with the demand for increased accountability and evidence of learning outcomes given the increasing levels of public and personal investments in higher education (Mallory & Clemont, 2009). One criticism of the literature on student engagement is that not much has focused on international students, and more specifically on subgroups within the international student population, to sufficiently inform policies and practices (Bevis & Lucas, 2007; Zhao et al., 2005). This study adds to that body of literature on student engagement and college impact by addressing learning outcomes and college experiences of international students.

Collectively, faculty, administrators, and policymakers could benefit from the results of this study. The expectation is for (a) curricula revisions to become more informed, (b) pedagogical decisions and practices to become sensitized to the issues of international students, and (c) more specialized programs and policies to be implemented based on knowledge of the engagement pattern as well as the type of activities that are of interest to international students.

Definition of Key Terms

The following terms are central to the proposed study: international students, student engagement, student success, race and ethnicity, gender, institutional type, and

institutional factors. Each term is defined to bring clarity to their usage throughout the study.

An international student is defined as a nonimmigrant student who has been granted temporary admission to the United States for the sole purpose of completing an academic program of study (Institute of International Education, 2012d). These students must be issued a student visa (F1 or J1 visa) and are usually expected to return to their home country upon completion of studies. These individuals are neither immigrants (documented or undocumented), nor United States citizens, nor refugees in the United States.

Student engagement refers to the amount of time and effort devoted by students to educationally purposeful activities (Kuh, 2001a). These activities occur in and out of the class and involve interactions with peers, faculty, and administrators. Engagement also includes the role institutions play in empowering students to participate in educationally meaningful activities (Kuh, 2003).

For this study, student success is defined as “academic achievement; ... satisfaction; acquisition of desired knowledge, skills, and competencies; persistence; and attainment of educational objectives” (Kuh et al., 2007, p. 10).

Race and ethnicity are socially-constructed classifications used to describe one aspect of an individual’s identity (Braxton, 2003; Evans, Forney, Guido, Patton, & Renn, 2010; Walker, 1993). These classifications are commonly used by the United States government and other institutions and agencies to collect personal information about an individual. These classifications often frame the options presented to international

students as they are asked to self-identify on official United States government forms and university forms. Only four racial and ethnic categories are used in this study because the other categories are too small for meaningful comparisons and analysis: Black, White, Hispanic, and Asian. On the 2007 NSSE instrument, international students were asked to identify their racial and ethnic group from the following categories: Asian, Black, White, Mexican, Puerto Rican, other Hispanic or Latino, Multiracial, and Other. For this study, the category Hispanic consists of Mexican, Puerto Rican, and other Hispanic or Latino who also identified as international students.

Gender, like race and ethnicity, is a social construct that is used to describe an individual's expression of femininity or masculinity (Braxton, 2003; Evans et al., 2010; Walker, 1993). Additionally, gender is a demographic classification used by United States government and other institutions and agencies to collect data relative to one's biological sex. International students are also required to self-identify on official forms using one of the two sex categories: male or female, from which gender is inferred.

Institutional type refers to the Carnegie Classification of Institutions of Higher Education which was first published in 1971 (Carnegie Foundation for the Advancement of Teaching, 2011). The classification to be applied in this study refers to the basic classification (an update of the traditional) of institutions with the most recent being the 2010 edition. The 2010 edition is the same as the 2005 edition with eight subcategories of institutions across these larger categories (see Appendix A)

Institutional factors are those features on which institutions can be distinguished from each other. These factors represent qualities that are often critical to the choice of

an institution by students. These factors contribute significantly to the kind of experience students are likely to encounter at a given institution. Examples of these factors are institution's mission, size, financial aid, resources, selectivity, and control.

The National Survey of Student Engagement (NSSE, see Appendix B) is the instrument designed by Indiana University Center for Postsecondary Research to collect data relative to students' time and effort dedicated to educationally meaningful activities and the outcomes associated with those experiences (NSSE, 2011).

Summary

This chapter sought to build the case for the study of international student engagement. The study was framed in the context of globalization as a transformative force in higher education and internationalization as the response by institutions to navigate the challenges presented in this evolving environment. The argument was made for the importance of understanding the differences in experience by different groups of students in order for higher education institutions to effectively engage all students. The responsibility of fully engaging international students, in particular, rests primarily with student services professionals but also includes faculty and administrators. The results of this study inform those who work with and enhance the quality of the college experience for these students. The next chapter summarizes the literature on international students and discusses the models and theoretical perspectives used in studying student college experience. Chapter 3 focuses on the approach adopted by this study to explore international student engagement. Chapter 4 presents the findings and Chapter 5 presents the discussions, conclusion, and recommendations of the findings in this study.

CHAPTER 2

Review of Literature

This study examines engagement among international students in different types of institutions. Specifically, I am interested in differences among international students based on race or ethnicity, and gender. This review briefly focuses on international undergraduate students' growth and development within the United States higher education system. The review begins with a summary of the research to date on international students in the United States to obtain the current knowledge and findings available to the research community. Unfortunately, most of the studies approached international students from a deficit model where the underlying assumption was that these students were in need of socialization to the United States culture so that they would behave more like United States citizens. This approach failed to recognize the impact international students have on domestic students and the system as a whole. The approach also leads to a missed opportunity to explore international students as a rich source of knowledge for important learning about a global society.

The chapter continues with a discussion of several theories and models for studying college impact. Further, I present a section on student success, to include indicators of success. Finally, I examine the college environment, student experience, and ways in which the environment and experience are assessed. I focus on specific survey instruments that have been used primarily within the United States to create benchmarks for successful collegiate environments. Previous studies focusing on international students have not emphasized the differences within this broad group (Joo,

2002; Yebei, 2011). Scholars have raised questions regarding the usefulness of homogeneous treatment given the obvious cultural differences among international students that create unique problems for each ethnic group (Altscher, 1976; Cunningham & Kang, 1990; Ji, 1993; Yebei, 2011).

The current study seeks to fill the gap in the literature by focusing on the race or ethnicity of international students as well as their gender. The purpose of this study is to determine the relationship between these demographic characteristics and the students' level of engagement in college. The relationships will be examined to determine if there are differences in behavior or outcomes that can be correlated with these characteristics.

Research on International Students

International students in the United States date back to the nineteenth century (DuBois, 1956). Since that time, the number of international students has grown tremendously. Over the years, the research on international students has focused on understanding who they are and the challenges that they face in the United States. Very few studies examine these students' experiences from the perspective of their contributions and importance to the United States higher education system. This section of the review will summarize the foci of those studies related to international students in an attempt to represent the scope of those studies and to synthesize what has been discovered.

Studies involving international students looked primarily at their adjustment to life in the United States, and secondarily, to the general student population in the higher education system (Irungu, 2010). It is clear in the literature that international students

face greater challenges in their adjustment to the college environment than a majority of domestic students (Barker, Child, Gallois, Jones & Callan, 1991; Cox, 1988; Furnham & Bochner, 1986; Furnham & Trezise, 1983; Hechanova-Alampay, Beehr, Christiansen, & Van Horn, 2002; Urban, Orbe, Tavares, & Alvarez, 2010). The top challenges for international students identified in the literature are language challenges, academic difficulties, social and cultural differences, and adjustment to the United States education system (Andrade, 2008; Parr, Bradley, & Bingi, 1992; Robinson, 1992; Zhai, 2002).

Several studies provide a deeper understanding of each of these top challenges. First, Sandhu and Asradabi (1991) explain that the differences in enunciation, special-use words, and slang create most of the language difficulties. Language remains the single greatest adjustment hurdle for international students (Jung & McCrosky, 2004; Lacina, 2002; Littlemore, 2001; Senyshyn, Warford, & Zhan, 2000; Soontiens, 2004). Second, Rajapaksa and Dundes (2003) and Zhai (2002) suggest that social and cultural differences create problems for social integration, feelings of isolation, and lead to financial concerns, and family stress. Third, Burns (1991) and Poyrazli and Grahame (2007) highlight that stress among international students is generally higher than for domestic students. Fourth, Tatar (2005) and Zhai (2002) further report that manifestations of academic difficulties are in the areas of learner autonomy and independence, grasping United States academia's interpretation of cheating and plagiarism, fulfilling course requirements, and time management—specifically meeting deadlines. Additional academic challenges present in the literature are writing assignments, comprehension of lectures and assigned readings, and common classroom participation. Fifth, the cultural

nature of the rules, procedures, and expectations for classroom behaviors and interactions are factors that constitute the challenges for adjusting to the education system (Anderson & Powell, 1991; Poyrazli & Kavanaugh, 2006; Robertson, Line, & Thomas, 2000).

Beyond personal and individual challenges, other factors influence the adjustment of international students. According to Lacina (2002), Frey and Roysircar (2006), and Pederson (1991), the adjustment process is compounded by the lack of support systems typically found in friends and family. Further, Jacob and Greggo (2001) find that international students lack the knowledge and understanding of the broader cultural expectations. Church (1982) and Cole (2007) report among other factors, relational and racial conflicts as additional problems faced by international students. In several studies, homesickness and loneliness are found to be common problems, particularly for new international students (Alazzi & Chiodo, 2006; Andrade, 2006; Kilinc & Granello, 2003; Olivas & Li, 2006). Brown (2008), Lacina (2002), and McKinlay, Pattion, and Gross (1996) also highlight culture shock as another area of problems for international students. Culture shock refers to an emotional reaction associated with anxiety brought on by a sense of helplessness as one encounters a new cultural environment. Chapdelaine and Alextich (2004) suggest that international students would benefit from intergroup activities as a means of minimizing the impact of culture shock, particularly in the first few months.

Another suite of research identifies several factors that affect international students' adjustment to the college environment. These factors well noted in the literature are: self-efficacy (Black & Mendendhall, 1990; Harrison, Chadwick, & Scales,

1996; Hechanova-Alampay et al., 2002); cultural novelty of host country (Hechanova-Alampay et al., 2002); social support (Pederson, 1991); and friendships with students from their home country and domestic students (Hechanova-Alampay et al., 2002; Johnson, 1993; Pedersen, 1975; Zhai, 2002). Student support professionals working with international students identify other factors that exacerbate the adjustment challenges. They identify personal issues related to housing, climatic changes, relationship norms, and isolation on campus (Trice, 2001). Poyrazli, Arbona, Nora, McPherson, and Pisecco (2002) add lack of study skills and lack of assertiveness while Campbell and Li (2007), Frey and Roysircar (2006), and Pyle (1986) find loss of status and identity, powerlessness, low self-esteem, and feelings of worthlessness as contributing factors.

The next group of studies, while dated, holds important insights for the current study, and functions as a premise for examining the data. Studies specific to the impact or influence of support services or activities on the international student experience found that there are poor campus orientations and counseling programs as well as inadequate information for international students. International students are rarely provided proper career development information (Walter-Samli & Samli, 1979). Finding housing is the second most difficult challenge for international students (Barakat, 1988). Living with domestic students enhances international students' cross-cultural experience (Klineberg & Hull, 1979; Lange, 1989; Surdam & Collins, 1984). When asked about their desire for more extra-curricular activities that were less American based, international students differed by nationality, marital status, and interests (Boyer & Sedlacek, 1986; Parson, 1991, Yeung, 1980).

Scholars have found that other factors influence international students' overall performance. For example, according to Spaulding and Flack (1976) and Lee, Abd-Ella, & Burks (1981), the length of time students spend in the United States is related to their academic performance, satisfaction with training, and feelings of marginality and alienation. Lange (1989) and Lee et al. (1981) suggest that Canadians, Europeans, Latin Americans, and Oceanic cultural groups adjust better in the United States higher education system than other ethnic groups. The literature had mixed findings about differences in the performance of international students based on gender such as academic achievements in engineering and the sciences (Collins, 1976; Cunningham & Kang, 1990; Ji, 1993; Smith, 1990).

Despite the evidence that the majority of international students face challenges in adjusting to the college environment, there is a paucity of research on the effectiveness of institutional efforts in addressing these students' needs (Dunnett, 1977; Joo, 2002; Kajorsin, 1979; Obong, 1984). According to Andrade (2003) and Evans (2001), international students' persistence is influenced by their academic preparation; personal commitment and desire to succeed; academic and social integration; social network inclusive of family, friends, peers and faculty mentors; and language proficiency. Andrade (2008) suggests that cultural integration and campus climate, as well as spiritual involvement at religious institutions, positively affect persistence of international students.

There is still a gap in the literature related to the academic performance and achievement among subgroups of international students. Additionally, very few large-

scale studies focus on international students' perceptions of their college environment and the impact or influence of that environment on outcomes (Irungu, 2010). More scholarship is needed to understand how the current theories of college impact relate to international students and how students' outcomes may differ based on institutional types. This study will attempt to contribute to the current knowledge on the international student experience in United States' colleges and universities by emphasizing the theory of student engagement and its relationship to these students. To make the case for the theory of student engagement some related theories will be examined in the next section.

Student engagement grew out of decades of studies focused on measuring the impact college had on students (Wolf-Wendel, Ward, & Kinzie, 2009). Those studies attempted to assess the usefulness and effectiveness of various college experiences in bringing about desirable student growth and development (Pascarella & Terenzini, 2005). The studies also led to the development of theories used to explain the effect college had on student development. Student engagement, therefore, has evolved as one of the current ways of explaining how student behavior in college led to holistic development (Wolf-Wendel et al., 2009).

Key Theories of College Impact

The four theories covered in this section offer slightly different emphases on the study of college impact and persistence. In an attempt to distinguish among three of the theories, Wolf-Wendel et al. (2009) point to the origin of the work of the progenitors as the basis for distinction. Astin's theory of involvement is in response to his findings from the Cooperative Institutional Research Program (CIRP) that suggest students who are

active in their learning are also more successful than students who are less active (Astin, 1985a, 1985b, 1993, 2003; Pascarella & Terenzini, 2005; Wolf-Wendel et al., 2009).

Tinto's theory of integration is based on his desire to develop a deeper understanding of students' departure and persistence behaviors (Braxton, Sullivan, & Johnson, 1997; Pascarella & Terenzini, 2005; Tinto, 1975, 1993; Wolf-Wendel et al., 2009). Weidman's theory of socialization is as an explanation of the process of college impact and focuses on noncognitive outcomes, particularly career choice (Pascarella & Terenzini, 2005; Weidman, 1987, 1989). Kuh's theory of engagement is aimed at identifying best practices in undergraduate education (Kuh, 2001a, 2001b, 2003; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005; Wolf-Wendel et al., 2009). It is important to note therefore, that none of the theories claims to be exhaustive but rather seeks to focus on key aspects of the college experience in order to predict specific outcomes.

Theory of Involvement

Astin's (1970) theory of student involvement provide researchers and administrators with a lens through which to analyze the impact of students' connections to the campus environment and students' successful completion of their programs of study. For Astin, students need to engage meaningfully in their own academic experiences in order to achieve success. As students spend quality time and effort on educational tasks, they have meaningful academic achievement. Students who attend classes, complete assignments, do the readings, and ask questions in order to clarify misunderstandings are said to be involved (Astin, 1985a). Involvement also includes being able to interact with peers while attending to academic and social activities.

Students who make time to consult with faculty and seek help in ways that would benefit their learning goals are further involved in college life (Astin, 1993). An uninvolved student, in contrast, is one who neither attends classes, nor seeks help from peers and faculty. He or she ignores assignments, readings, and avoids opportunities to connect with faculty and peers who could provide the needed assistance (Astin, 1985b). These students tend to engage in activities that are counter-productive to the goals of academic success.

The environment is a major contributor to how students are able to get involved (Wolf-Wendel et al., 2009). Reciprocity between the individual and the environment is described by developmental psychologists as individual-environment interaction. As the individual influences the environment so is the environment likewise shaped and impacted by the individual's characteristics (Kuh, Hu, & Vesper, 2000). Astin (1985b) contends that the environment is only effective when it increases involvement. Through the manipulation of the campus environment, institutions are likely to increase students' level of involvement. Institutional influence is mediated by students because they ultimately choose their level of involvement (Astin, 1985b).

It is important to distinguish between students who voluntarily avoid involvement opportunities and those who are less able to become involved because of family or work commitments (Astin, 1985a). Students in the second category are usually distracted because several and varied external factors clamor for their time and effort. The decision to engage or not to engage requires much more thinking for those students than the students who voluntarily avoid involvement.

Astin's input-environment-output model involves three main components (Astin, 1993). The input refers to the students' "talents, skills, aspirations, and other potentials for growth and learning that [come with them] to college" (Astin, 1970, p. 225). Inputs directly or indirectly impact output through interactions with the environment. The environment includes those aspects of the institution that affect the student, such as the people, programs, curricula, co-curricula and extra-curricula activities which occur on and off campus. Additionally, institutional size, resources, and governance are features of the college environment. The "outputs refer to measures of the student's achievements, knowledge, skills, values, attitudes, aspirations, interests, and daily activities" (p. 224). To truly assess college impact, Astin (1970) postulates that the most important relationship is between the environment and outputs. He notes that researchers should also be interested in the level of influence the environment has for different students. In any event, he believes all three variables are important in assessing the true impact of college on students.

Through the use of his model, Astin (1993) studies the effect of students' level of involvement on college outcomes while controlling for input variables. He argues that it is important to establish a baseline in order to measure growth or change in students. The aim is to determine whether the change (output) genuinely occurs as a result of college attendance rather than other factors, such as maturation.

A criticism of the theory of involvement is that it tends to understate the role and responsibility of the institution in helping minority students to navigate the transition to college (Rendón, Jalomo, & Nora, 2000). According to Rendón et al. (2000), while Astin

believes in the importance of the institution's role in increasing involvement, the lack of emphasis in his theory results in the focus being placed on student responsibility.

College and university administrators create educational and social programs to engage students but often failed to connect with students so that those who are dropout-prone could actually become involved. A clear weakness in the involvement theory is that it does not emphasize that involvement, as purported, is more possible for traditional than nontraditional students. Nontraditional students are defined as "students who, in addition to attending college, may be married, a married or single parent, a care[giver] for an elderly family member, a fulltime worker, or are retraining for a career" (Dawna-Cricket-Martita & Charles, 2003, p. 671). Older nontraditional students have more commitments to family and work life and are, therefore, less available to get involved, particularly in out-of-class activities. Jalomo (1995) and Rendón (1994) conclude that nontraditional students benefit from validation rather than involvement. These students perceive involvement as someone reaching out to assist them. Rendón (1994) finds that validation holds transformative powers for those students through constant encouragement and support of their educational goals and maintenance of important external connections.

Theory of Integration

Tinto's (1975) theory of student integration states that students who perceive that they are highly integrated into college life exhibit stronger levels of commitment both to degree completion and to the institution. Tinto's theory is based on two earlier theories: Durkheim's theory of suicide and Van Gennep's rites of passage theory (Tinto, 1975; Wolf-Wendel et al., 2009). Durkheim (1951) believed that individuals who committed

suicide usually experienced isolation and loneliness. These individuals were less included or involved in societal life or events. Van Gennep (1960) studied the rite of passage customs commonly practiced in tribal groups. Here young men were expected to forget their past and transition into adulthood through a ceremonial rite of passage. These youngsters were expected to integrate the norms of adulthood and to take on responsibilities based on their new roles.

Consistent with his representation of Van Gennep's theory, Tinto (1993) believes students who leave home to attend college need to step into the college world. To fully step into college, the students are to give up their previously held beliefs, thoughts, and attitudes and integrate academically and socially into college. This process of integration is to develop in them strong commitments to persisting to the end of their programs. Academic integration, according to Tinto (1975), involves interacting with peers and faculty on a consistent basis around issues of academic work. These interactions might involve asking questions, seeking clarification or receiving academic advising. Social integration is more about students' casual and social interactions with peers and faculty and their engagement in extra-curricula activities.

Students who feel a sense of connection with their academic responsibility and their institutions tend to be more committed to their goals (Wolf-Wendel et al., 2009). Tinto (1975) acknowledges that some students may be overly academically integrated to the neglect of social interaction. This situation, he contends, may result in those students leaving college prematurely. When students leave an institution for reasons other than poor academic performance, it is described as voluntary withdrawal. Voluntary

withdrawal is unlike the scenario in which students are so socially integrated to the neglect of their academic goals that they perform poorly in their academics and are eventually dismissed from college.

According to Pascarella and Terenzini (2005), Tinto's model describes dropping out as a process that involves the interaction of student background characteristics, academic experiences, and family status with the academic and social environments in college. The outcome of that process has either a negative or positive impact on students' initial commitments. Those commitments are to degree completion and to the institution of choice. As students enter college with a set of already established pre-variables that influence their initial level of commitment, they are exposed to the academic and social environments that enable full integration. These experiences lead to a new, expanded or modified set of goals and institutional commitments that become the basis for students' decisions to depart or to persist to degree attainment at that institution.

In his early work, Tinto (1975) was concerned more about voluntary withdrawal because this type of withdrawal had the potential for students to reenter, transfer or totally exit the higher education arena. In a later writing, Tinto (1993) emphasizes that the institution should take on greater responsibility for creating students' integration through the design of programs and policies that support students and encourage them to engage in college life.

In appraising Tinto's theory, Braxton et al. (1997) assessed each of the 13 propositions emerging from the theory using evidence from studies involving multiple and single institutions. Multi-institution studies provided strong support for only four

propositions while single-institution studies provided support for five. Based on the findings, they concluded that the theory lacked empirical internal consistency because there was only partial support. Bean and Metzner (1985), and Cabrera, Stampen, and Hansen (1990) suggested that the model did not include all the variables needed to understand departure behavior.

Another response to the theory of integration comes from the social reproduction perspective. This perspective suggests that some students are better able to integrate because of their background and their cultural and economic capital that predispose them to successful integration (Berger, 2000b). Tierney (1992) criticizes Tinto for misapplying the anthropological concepts of rites of passage, and for ignoring the role of differences among minority cultures on students' interactions. The rites of passage ceremony, in its original context, marked young adults' transition from childhood into adulthood within their specific tribes. Tinto's application of this concept suggests that new college students need to leave behind all they knew and embraced prior to their entry to college and to adopt completely the culture on campus in order to survive. Yet, many students—including minoritized students from specific cultures—are deeply rooted in their identities. To suggest that these students have to leave behind who they are in order to integrate into campus culture is to dishonor who they are and their heritage. De Anda's (1984) concept of dual socialization—students socialize in the original culture as well as college culture—speak of a mechanism minoritized students develop in order to function in their converged worlds of home and college. Dual socialization therefore means less anxiety for those students. Hurtado and Carter (1997) point to ambiguities

around the social integration concept. Given the variety of interpretations associated with the concept, researchers have found it difficult to measure directly. These criticisms highlight some of the limitations of this theory in explaining the current realities of the college environment.

Theory of Undergraduate Socialization

In developing his concept of socialization, Weidman (1987) borrows extensively from sociology and its study of human interactions and the environment. He describes socialization as involving membership in desired groups and the wider society. Thornton and Nardi (1975) suggest that there are four stages to the development of socialization within a group: anticipatory, formal, informal, and personal. The ultimate goal of socialization is to prepare students so that they are able to function at the personal stage where they could take on full membership and commitment to the group and responsibility in fulfilling their roles. By applying the dimensions of socialization theory to the undergraduate socialization process, he explains how college students are impacted by their college experiences. Those dimensions include norms and social integration, reference groups and social relationships, anticipatory socialization, and temporal aspects of socialization.

The societal perspective of norms and social integration differs from the individual perspective. From a societal perspective, norms are the standards, rules or regulation governing behaviors with a group or society. Social integration speaks to common or shared norms or patterns of relationship among group or societal members. On the individual level, norming and social integration involve the learning of acceptable

modes of behavior or “role enactment[s]” (Mortimer & Simmons, 1978, p. 422) and learning how to exhibit those normative behaviors. It is important to note that the individual retains flexibility in identifying the group(s) of interest and can modify the group’s expectation of the role. This variation in expectation occurs as a by-product of the individual’s maturity demonstrated through the fulfillment of the role in other acceptable ways (Weidman, 1987, 1989).

Weidman contends that the influence of reference groups through interpersonal relationships functions as an important mechanism for the transmission and processing of socialization. Brim (1966) explains that the individual learns acceptable behaviors through interactions with others who then hold him or her accountable for those appropriate behaviors. College students experience anticipatory socialization while in college as they make important decisions about the type of career and professional positions and statuses they want to have after college. This socialization allows them to acquire the appropriate values, attitudes, and behaviors for their chosen occupations (Weidman, 1989). Undergraduate education facilitates this kind of socialization as students receive education, credentials, experiences, and resources that equip them for work.

Socialization is ongoing and occurs differently for different categories of students, such as traditional versus nontraditional students. A direct relationship exists between the duration of influence and the potential of socialization. The implication of this relationship for colleges and universities is that with each of the 4 years of a degree there is the potential for greater socialization. Therefore, students who participate in 4 years

and beyond in college are more ready for and equipped with the necessary tools to fit their particular roles and positions in society than those with 2 years and less (Weidman, 1987, 1989).

According to Pascarella and Terenzini (2005), the Undergraduate Socialization Model proposed by Weidman (1989) suggests that students come to college with their background characteristics already shaped by the influence of parents, peers, and other members within their communities. These characteristics are then integrated into the college experience. The college experience has two dimensions: academic and social. Within the academic context, students are influenced by the norms of institutional goals, objectives, and the curriculum as well as the expectations of faculty and administration. In the social context, the factors that influence student experience are the institutional size, structure, and culture along with peer groups. Students' integration into the academic and social contexts is mitigated by their interpersonal and intrapersonal interactions and processes within college, which continues to be influenced by parents, peers, and other members in their communities. The outcomes of the blending of all these variables lead to the socialization of students in terms of their career choices, life style preferences, aspirations, and values.

Both Astin's theory of involvement and Tinto's theory of integration influence Weidman's theory of undergraduate socialization (Weidman, 1987). The criticisms that are levied at both of those theories, as presented in earlier paragraphs, point to challenges in their fundamental assumptions. Weidman's definition of socialization that incorporates the notion of social integration as characterized by Tinto is an example of

those criticisms. In a recent interview, Tinto noted that his earlier use of integration—students leaving behind their previous cultures and experiences in order to fit into college culture—faced major problems in today’s context of a diverse campus (Wolf-Wendel et al., 2009). A further concern is that the socialization model is designed explicitly to explain noncognitive effects of college on students (that is, the development of values, attitudes, and skills for career and work preparation), thereby emphasizing less students’ academic development and achievements. Additionally, Hurtado and Carter (1997) criticize studies like Weidman’s for their use of the assimilation or acculturation framework because they view contact as unidirectional in nature. Finally, the theory acknowledges person-environment interaction but is ambiguous on how students impact the normative contexts of their collegiate environments.

Theory of Engagement

The theory of engagement presented by Kuh (2001a) refers to the time and effort students dedicate to activities most associated with student success. Time refers to the amount of time committed to an activity while effort relates to the energy students exert on an activity. Engagement further involves the use of institutional resources (such as finances, facilities and human capital) to foster students’ participation in meaningful educational activities (Kuh, 2003). Key educational practices including active and collaborative learning, purposeful student-faculty interactions, a warm and supportive environment, and clear communication of reasonable expectations are proposed as conditions for student engagement or at best to foster student participation (Kuh, 2001a).

The engagement concept has its origins in Pace's (1984) ideas of quality of effort and quality of experience. Pace defines the quality of effort as the activities or tasks students accomplish in order to satisfy a requirement or meet an objective. The quality of experience is defined as the value of each encounter or the gains achieved by students. He makes the distinction between a student who goes to the library and looks at photos of the Grand Canyon and a student who visits the Grand Canyon. He maintains that the student who makes an actual visit exerts more effort and ultimately has a richer and more meaningful experience.

Strayhorn and DeVita (2009) highlight a stream of research that finds a strong positive relationship between the level of energy invested in academic pursuits and the level of engagement in studies and campus life (Astin, 1984; Davis & Murrell 1993; Kuh, 1995). This relationship usually results in a positive overall college experience. Student engagement is associated with many positive outcomes and "robust educational gains ... such as critical thinking; intellectual development; diversity; adjustment to college, psychosocial development and persistence" (Strayhorn & DeVita, 2009, pp. 88-89). Wolf-Wendel et al. (2009) also notes that the theory of engagement informs institutional improvement by identifying specific activities institutions could implement in order to directly and indirectly impact students' outcomes.

Kuh et al. (2007) suggest that a component of student success is dependent on the level of engagement of students in educationally purposeful activities. In contrast, Harper, Hurtado, and Sax, in an interview, make the point that interaction as an extension of engagement is more important (Wolf-Wendel et al., 2009). For example, class

attendance has been an indicator of students' engagement but if those students who attend classes never interact with other students and faculty while in attendance then they derive fewer benefits than those who do interact. In advancing her point about interaction, Sax (interview) notes that a student who feels dismissed when visiting faculty might no longer have a desire to engage with them (Wolf-Wendel et al., 2009). In both examples, the students are engaged but lack crucial interaction. Notwithstanding, according to the 2006 National Survey of Student Engagement Report, student engagement holds positive outcomes for all students (NSSE, 2006).

Other concerns that I have for the theory of engagement relate to its application to a diverse college student population. First, the undergraduate population is comprised of many nontraditional students. Nontraditional students typically differ from traditional students in attendance, age, maturity, experience, and responsibility. Traditional students tend to live in residence halls while nontraditional students are generally commuters. These differences have profound influence on the level of socialization and development for both groups of students (Bean & Metzner, 1985; Kuh, Gonyea, & Palmer, 2001). The theory is more aligned to the experiences of the traditional, full-time, residential student than to nontraditional.

Second, the theory of engagement could be criticized for lacking cultural sensitivity to historically underrepresented populations in higher education. According to Harper and Quaye, (2009), minoritized and international students generally engage differently than other groups of students. For example, they relate differently to authority figures—faculty and administrators—than students from majority culture. These cultural

differences create some challenges for minority and international students to engage as fully and widely with faculty and administrators as other students. Importance should, therefore, be placed on understanding how this and similar kinds of differences affect some students. The nature and effects of these challenges on student outcomes as well as the approach institutions take in addressing these challenges remain understudied in the student engagement literature.

Engagement theory is limited in its articulation of how it accounts for differences among students from different ethnic and racial backgrounds. However, when the theory is tested using the NSSE instrument, it holds positive outcomes for all groups of students (NSSE, 2006). It has less criticism among scholars and is flexible enough to respond to the issues and needs of students from other places outside the United States (Anderson, Carmichael, Harper, & Huang, 2009). For example, Zhao et al. (2005) applied the theory in studying international students and found that international students were more engaged in educationally purposeful activities than their U.S. counterparts, especially in their first-year, in the areas of academic challenge and student-faculty interactions. International students reported greater gains in personal and social development, and general education as well as use of computer technologies in more course learning activities (Zhao et al., 2005). By extrapolating findings from Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008), one is likely to conclude that first-year international students who have a one point standard deviation increase in engagement would also increase their Grade Point Average (GPA) by approximately .04 points. Additionally, international students are more likely to persist to second year than all racial groups of U.S. students.

Engagement, therefore, has a positive relationship with academic outcomes for international students. An important note is that one may not conclude from these findings that international students have stronger academic performance than domestic students (Campbell & Cabrera, 2011).

The engagement theory is supported by a strong body of research and overwhelming evidence that establishes its usefulness in reporting meaningful educational practices (Wolf-Wendel et al., 2009). The unit of analysis in research using this theory is typically the institution even though the data are collected from students. This feature has great appeal for multi-institutional comparisons and allows for understanding of trends and patterns across institutions.

Studying College Student Success

To explore the concept “student success” I focus on three strands of scholarly thought. The first strand highlights researchers’ attempts to construct common understandings when defining student success. The second focuses on some of the major indicators and measures typically included in research on student success. The third strand considers various theoretical perspectives of student success. These perspectives include psychological, sociological, cultural, organizational, economic, and spiritual.

Definition and Characterization of Student Success

Varied definitions have been put forward for student success (Braxton, 2003). The major challenge for colleges and universities is to determine what constitutes success for students within a flexible system. Unlike many international higher education systems where programs and educational experiences are more prescribed, describing and

characterizing success in the United States higher education system is more challenging. To appreciate the level of complexity involved in agreeing on a definition requires a deeper understanding of the variety of opportunities and options available to students in the United States higher education system.

A crucial difference exists between the student and the institutional perspectives. From the student perspective, there is a variety of goals that students are attempting to achieve. For example, students can pursue a degree program in one institution and concurrently enroll in one or more courses at another institution. In this scenario, the goal of enrolling in the second institution is to complete one or more courses, not to complete a degree. Another conceivable option for students is to attend a 2-year institution with the intention to transfer to a 4-year institution. In this second scenario, the goal of the student in enrolling in the initial institution is to complete a 2-year program, not a bachelor's degree. A third option is for students to pursue short programs or courses that satisfy job requirements or increase marketability and improve one's competitive edge for promotion either within a current job or in obtaining a new job, not to complete a degree. Each of the previously described scenarios represents a specific goal for students with different needs. Therefore, success looks different for each group of students and requires unique indicators and measures for assessing the quality of their achievements. Braxton's (2003) categorization of student goals into three types, enrollment goals, academic experience goals, and social experience goals, provides a useful framework for thinking about the differences in success goals among students.

For institutions, success needs to be quantifiable and measurable. This is particularly true for institutions that receive funding from the state and federal governments (Schuh, 2009). The receipt of government funding attracts added layers of scrutiny and reporting requirements in order to satisfy the public. Given this context of increased accountability and transparency, institutions are required to produce results that are clear indications of their students' achievements and quality of performance (Mallory & Clemont, 2009). With those constraints, institutions are expected to be more intentional and precise in their definition of student success. As such, institutions are responsible for finding ways of demonstrating their abilities to produce successful students.

Gender represents another important variation in defining success. Men, according to Sturges (1999), define success more narrowly than women. Dyke and Murphy (2006) suggest that men emphasize achievement of material and immaterial possessions, career success, and money in their definitions. In contrast, Enke and Ropers-Huilman (2010) find that women at Catholic women's colleges emphasize work-life balance, relationships, contribution to community, and achievement of individual goals in their definitions of success. The task for the leaders of colleges and universities, according to Enke and Ropers-Huilman (2010), is to ensure relevant college experiences that will empower men and women to achieve their internal definitions of success.

Based on the differences in perspectives, arriving at consensus around a shared definition requires the inclusion of all sides—student and institution, men and women—in order to accurately represent the various dimensions of the concept “student success”.

According to Venezia, Callan, Finney, Kirst, and Usdan (2005), the common elements usually included in the definitions for student success are persistence to sophomore year, grades, time taken to complete degree, enrollment in postsecondary education, and graduation. Braxton (2003) states that “student success does not equate with degree attainment for all students” (p. 318). His point of view is in contrast to many of those who focused on degree attainment as the measure of student success. Braxton’s view is aligned with Tinto’s (1993) work on student-institution fit that suggests some institutions’ culture and climate are unhealthy for some students. Some students increased their levels of engagement by moving to other institutions where they perceived the campus climate is warm and supportive of their educational goals. By so doing, they achieve a better student-institution fit. A guideline for defining student success, according to Braxton (2003), is to focus on the achievement desired by the student or the institution, and sometimes by both.

Kuh et al. (2007) report that current definitions of success range from traditional measures of scores on standardized admissions tests, GPAs, number of credit hours earned, enrollment in graduate programs, and professional board examinations, to more fluid and affective measures such as students’ satisfaction with campus environment, impressions of institutional quality, and attitudes or commitment to the institution. The evolution of the construct of student success also encompassed less tangible cognitive and student development outcomes that prepare students to function effectively in a pluralistic society, and as a global citizen (Kuh et. al., 2007).

Indicators and Measures of Student Success

Given the complex nature of defining student success, Braxton's (2006) categorization of student success as academic attainment, acquisition of general education, development of academic competence, development of cognitive skills and intellectual dispositions, personal accomplishments, and personal development is useful in guiding assessment of a variety of outcomes. For this review, I attempted to identify the best indicators for each domain.

For academic attainment, Lenning, Munday, Johnson, Vander Weil, and Brue (1974), Astin (1977), and Willingham (1985) identify persistence in college, persistence to senior year, early graduation, earning a bachelor's degree on time as well as meeting graduation requirements for additional academic majors as indicators. Additional indicators are choice of major, grades, graduation academic honors, senior project honors, academic learning as measured by in-course examinations, standardized tests, and admission and enrollment to graduate or professional school, particularly to pursue terminal degrees (Braxton, 2006).

The acquisition of general education has less precise indicators than some of those in academic attainment. The focus here is on knowledge and appreciation of world cultures and ways of living inclusive of the arts, philosophies, literature, music, aesthetic sensibility, fine arts, and traditions (Braxton, 2006). Braxton (2006) posits that knowledge and appreciation are demonstrated by one's attendance at cultural events, lectures, and listening to classical music. Additional success indicators in this category

are knowledge of scientific developments, and knowledge of world, community, and social problems.

Academic competence refers to critical skills used in the performance of academic tasks. The development of academic competence includes reading, writing, and speaking clearly, correctly, and effectively (Braxton, 2006). Other academic skill areas are mathematical and quantitative competence where students are able to manipulate and interpret statistical data, and foreign language competence. Also included in this domain is the achievement of major field requirements spanning mastery of facts, vocabulary, and principles in select academic field(s).

Braxton (2006) describes cognitive skills as “an assortment of general intellectual skills and competencies” (p. 4) that involve critical thinking, analytical and problem-solving skills, and ability to synthesize knowledge. Also in this category is ability to reason and to form thinking methods, and principles that could be generalized to other contexts. Intellectual dispositions refer to interests, activities, values and attitudes such as intellectual tolerance and integrity, wisdom and lifelong learning.

Personal accomplishments focus on achievement beyond strict academic or classroom achievements (Braxton, 2006). These include serving in leadership capacities in on-campus clubs or societies or simply belonging to university or college committees or joining a well-known group on campus. Indicators of this domain include selection or election for student leadership, senior or lead role in some kind of activity, and publication as author or coauthor of a scholarly article.

According to Braxton (2006), many of these indicators are associated with personal development and adjustment. He highlights two forms of psychosocial personal development: internal and external psychosocial oriented attributes. The internal psychosocial indicators are: interpersonal and intellectual self-esteem, making independent decisions, self-discovery, development of personal identity, attainment of psychological stability and self-sufficiency, emotional maturity, values clarification, and adaptability. The external psychosocial indicators are: skills in relating to others, developing tolerance and understanding of other people, formation of long-term friendships and loyalties, development of skills and confidence in diverse interactions, developing meaningful relationships with other people. Additional external indicators focus on future orientation: planning ahead, prudent in risk-taking, and formulating a realistic view of the future. General indicators presented by Baird (1976) are moral and philosophical development.

Braxton (2006) proposes eight domains but only six are related to the immediate academic environment. Occupational attainment and preparation for adulthood and citizenship—the other two domains—occur beyond the undergraduate years and, therefore, are of less importance to the issue of success during college. The six domains provide a good framework for measuring student success and a solid foundation for engaging with the student success construct. I find them, however, lacking with respect to technology and all the related competencies required for effective functioning in today's high-tech society. Technology has become a crucial feature in higher education, supporting students' learning and educational activities including academic advising,

admission, and enrollment management (Kuh et al., 2005). Additionally, many occupational sectors require competence in the use of technology to enhance job performance (World Bank, 2000).

For Kuh et al. (2007), the relationship between engagement and success is that engagement is an indicator for success. Success broadly defined must include some measure of the extent to which students are involved in a wide range of educational practices and conditions. In suggesting another way to organize research around student success, Kuh et al. (2007) provide a summary of the sets of variables included in models used to examine student success. The variables are: student background characteristics, precollege experiences, and enrollment patterns; institutional characteristics; students' interactions with peers, faculty and staff; students' perceptions of the learning environment; and the quality of effort students devote to educationally purposeful activities.

In spite of the lack of consistency in the definition and varied indicators of student success, two major themes inform the discussion. The first is the role of administrators and student development professionals in helping students to focus on their goals, whatever they are, and to achieve those goals using the resources made available to them through the institution (Braxton, 2003). The institution's responsibility to students is subjected to individual students' personal reasons for enrolling. The implication is for institutional resources and policies to be flexible in order to accommodate a variety of students' goals. The second is to understand student success in the contexts of student persistence and departure (Braxton, 2003). Certainly, if students drop-out—"specifically

defined as those students who do not return to the college in which they enrolled, have no definite plans to return, and do not transfer to another institution of higher education [and therefore]... do not achieve their educational intent” (Hoyt & Winn, 2004, p. 397)—before they graduate then it is unlikely that their experience would be classified as successful. Therefore, knowing students’ behaviors with respect to persistence or departure and the factors influencing those behaviors provides greater insight on how to minimize the opportunities for departure. Throughout the remainder of this paper, much emphasis will be given to the discussion on persistence and departure in relation to student success.

Theoretical Framework for Research on Student Success

This research adopts the theoretical perspectives suggested by Kuh et al. (2007) and Braxton (2003) for studying student success in college. These perspectives—psychological, sociological, cultural, organizational, and economic—with their related components, provide a sound framing of the student success construct for a comprehensive study. I propose a sixth perspective to illuminate the importance of this aspect of the student experience—the spiritual perspective. The perspectives are explored in order to identify the specific contributions of each to a more complete approach to the study of student success.

Psychological perspective. From the psychological perspective, I combine concepts from attitude-behavior theory, developmental theories, and elements of transition theory to explain student departure and persistence behaviors. The central components within this perspective are development of self-understanding, identity,

personality, and attributes. This perspective further examines how the components inform and shape students' behaviors (Braxton, 2003). These various components of the self describe the preentry characteristics of college students. The preentry characteristics are considered a part of the foundation for student success in college (Kuh et al., 2007). "Who students are and what they do before starting their postsecondary education make a difference in their chances for obtaining a baccalaureate degree or another postsecondary credential" (Kuh et al., 2007, p. 21).

To explain student departure, Bean and Eaton (2000) incorporate the Attitude-Behavior Theory in their psychological model on students' behaviors to determine how those behaviors are negotiated. A salient belief that emanates from the theory is that the performance of a behavior is a choice based on positive or negative self-evaluation of the behavior and the perceived value of the behavior to significant others. Choice is a reflection of one's attitude towards the behavior that determined future performance. In the case of college students, the behaviors displayed in college are based on past behaviors. Bean and Eaton (2000) contend that students adjust their behaviors in response to the demands of the collegiate environment.

The social learning concept—self-efficacy—proposed by Bandura (1997) offers an explanation for how students are able to modify their behaviors. Self-efficacy describes one's ability to achieve a goal as dependent on one's perception of his or her ability to achieve that goal. Therefore, self-efficacy accounts for students' ability to adapt to any college environment. Adaptation, that is overcoming challenges to the

demands of the college environment, is necessary in order for students to become successful.

Another concept from Bean and Eaton's (2000) model important to my framing of the psychological perspective was locus of control. According to Rotter (1966), two types of locus of control, internal and external, are evidenced in behavior. Kormanik and Rocco (2009) define internal locus of control as a predisposition for viewing reinforcement as being based on one's "behavior or relatively permanent characteristics or traits" (p. 5). In applying this idea to college students' behaviors, Braxton (2003) recharacterizes internal locus of control as the inner motivation to surmount barriers that allows students to cope and succeed as they navigate the "institutional bureaucracy, the academic system, the social system, and the external environment" (p. 322). In contrast, students who are driven by external locus of control were more accepting of events and circumstances as being out of their control and a result of fate or destiny (Bean & Eaton, 2000). If students have experiences that strengthen their internal locus of control, their self-efficacy increases and result in behaviors that lead to persistence rather than departure.

Parallel with Attitude-Behavior theory are developmental theories from which much of the knowledge about preentry characteristics has emerged. One such characteristic is identity. According to Erickson (1959), society endorses an intermediary period between childhood and adulthood called psychosocial moratorium when adolescents are allowed to discover who they are. During this period of exploration, adolescents are free to try different roles in order to establish their identities and their

specific roles in society (Marcia, 1994). As an identity is chosen, adolescents are better poised to develop confidence in their self-concept and self-understanding. A better grasp of one's self leads to increased self-efficacy to succeed (Kuh et al., 2007). Other preentry characteristics are the achievement of moral development (Gilligan, 1982; Kolberg, 1976), cognitive development (Baxter-Magolda, 1992; Perry, 1970; Piaget, 1952), and spiritual development (Fowler, 1981; Parks, 2000).

Sociological perspective. From the sociological perspective, the role and nature of students' interactions with the college environment are critical in understanding students' persistence or departure and ultimately student success (Kuh et al., 2007). Consensus has been achieved around the importance of students' time and efforts spent engaged in educationally meaningful activities co-constructed by students and institutions in fostering success. Generally, institutions create particular campus climates through the expectations communicated by their missions, goals, and types of programs (Kuh, 2009a). These expectations establish the tone of the interactions students experience. The impact of these interactions on students influences their views and attitudes toward the institution (Tinto, 1993). Therefore, the sociological perspective focuses on students' abilities to adjust to and participate in activities both on and off campus, and the extent to which they are able to establish friendships and navigate the college environment (Braxton, 2003). Students who achieve those outcomes are more likely to be committed to their goals and are more likely to persist.

Schlossberg's (1984) contribution of the concepts mattering and marginality is useful in understanding the effects of transition on new college students. Mattering

involves the valuing and caring for individuals. In the college context, students who feel cared for or believe someone has an interest in them, and know about their experiences tend to feel that they matter. A feeling of marginality develops in the absence of mattering conditions: attention, importance, ego-extension, dependence, and appreciation (Schlossberg, 1989). Students who feel marginalized are prone to drop out because they are less engaged as a result of being preoccupied with the feeling of lack of belonging (Schlossberg, 1984).

According to Astin's (1993) theory of involvement, the more students participate in the life of the institution, the more connected they are to the institution, and the more likely they are to persist. Tinto's (1993) theory of integration supports Astin's theory of involvement but offers a model that emphasizes the importance of social and academic integration in student retention. Tinto believes that if students have opportunities to interact with other students and with faculty, the more likely they are to have positive attitudes and views toward the institution, to feel a connection to the institution, and to persist to degree completion (Pascarella & Terenzini, 2005). He also believes that if students are making satisfactory progress toward degree attainment—earning passing grades and completing courses in a timely manner in relation to degree completion—then students are likely to persist. Pace's (1988) idea of quality time or effort is also well noted as a feature of students' persistence and retention.

Pascarella (1985) supports Tinto's argument for the importance of student–faculty contact in becoming more integrated in the college environment. Student–faculty contact, while it speaks to in–class interactions, also includes contact that occurs out of

class. Students who have greater access to faculty either face-to-face (in-class, out-of-class, formal or informal), or via technology (e-mail, Facebook, twitter, or cell phone), experience a higher level of engagement and are more likely to persist (Kuh et al., 2005). Sax cautions those assuming that being involved meant being engaged, and that engagement automatically meant quality (Wolf-Wendel et al., 2009). She highlights the fact that the student's encounter with faculty can be negative, in which case students may well reduce their level of engagement.

In one example, Sax (2008) finds differential outcomes for men and women, in that frequent interactions with faculty do not always result in desired outcomes for both males and females. For example, interaction with faculty improves females' perceptions of their capacity to influence others, "results in intellectual exchanges, mentoring relationships, occupational guidance, and increases self-confidence" (Sax, 2008, p. 251), and predicts graduate degree aspirations, but also leads to declines in mathematical self-concept. She further finds that faculty interactions have positive outcomes for self-assessed leadership abilities, and social self-confidence but have no impact on critical thinking skills. Outside class interactions with faculty, she finds, lead to more traditional gendered role attitudes while intellectual challenge and stimulation lead to more progressive gendered role attitudes. For males, faculty interaction leads to improved self-rated public-speaking ability and improved confidence in their ability to become engineers.

Both male and female students' leadership self-concepts and social self-esteem are predicted by a personal relationship with a faculty member or an administrator (Sax,

2008). This evidence emphasizes the quality of interactions with faculty over and above time spent as important for meaningful personal development. Additionally, faculty role models promote students' sense of success in influencing others. Finally, career advice from advisers or faculty contributes to females' persistence in science careers after graduation.

An association exists between peer interactions and students' emotional health, men's mathematical ability, reading comprehension, critical thinking, and women's academic sense of self (Sax, 2008). Negative peer interactions, in contrast, exhibits an association with students' sense of psychological well-being, men's critical thinking, and women's focus on romance to the detriment of their academic and career aspirations. In spite of the negative outcomes, peer interactions provide the support network needed for students to be become fully involved and engaged, which has an association with student success.

The evidence from Sax (2008) supports previous research findings about the importance of frequent interactions between student and faculty as well as other students as a means of increasing students' connection and commitment to the institution. From the results, it is obvious that in-class interactions have better outcomes for females than out-of-class while for males in- and out-of-class interactions have overall positive outcomes. A surprising finding is that faculty interactions have less influence on critical thinking skills than positive peer interactions, particularly for males. As a result of observing faculty modeling critical thinking, my expectation—based on the social learning theory—was for students to develop greater competence in that area. According

to social learning theorists, students learn to perform some behaviors or skills through a process called modeling (Slavin, 2009; Sternberg & Williams, 2010; Woolfolk, 2010). Modeling is the demonstration of the complete process involved in the performance of a particular skill, task or behavior by a model. Given these results, I am interested in studying how international students' interactions with faculty and other students differ by gender across institutional types.

Cultural perspective. The cultural perspective focuses on the role of norms, values, practices, and languages in building a college environment that supported all students' success (Kuh & Love, 2000). Part of engaging in campus life for many first-year students involved living in residential halls, and working and playing together with others who quite likely have very different lifestyle practices and beliefs about everything that is important to the individual. Given the intentional intrusive nature of some of these campus arrangements, students are likely to find these practices conflicting or opposed to their individual cultures, creating discomfort (Kuh & Love, 2000). Some advocate that this kind of discomfort is healthy for development, but if students are ill-prepared for such challenges, they are also ill-equipped to respond in such a situation (Kuh, 2009a). Scholars warn that increased challenge without adequate support leads to frustration (Chickering & Reisser, 1993; Evans, 2003; Evans, Forney, Guido, Patton, & Renn, 2010; Sanford, 1966). If the level of frustration is too high for students, this will probably result in departure.

Martin (1992) offers three useful perspectives for understanding the complex nature of institutional culture. The first is integration, which refers to those common,

shared aspects of the culture of the dominant group. The second is differentiation, which explains the existence of subgroups or subcultures within the larger culture or dominant group. This occurs within any large group: smaller distinct groups form around their own sets of values, norms, and attitudes which set them apart from the larger group or other groups. The third is fragmentation, which describes individuals within group life who held different views and interpretations of meanings and significance of group life norms. Both Martin's differentiation and fragmentation perspectives highlight the presence of other cultures alongside the dominant culture. If the institution acknowledges these subcultures and responds by institutionalizing policies and practices that are supportive of students from these diverse cultures, the students perceive the environment to be warm and are more likely to persist than to depart (Kuh & Love, 2000).

Demands and expectations differ across cultures. Students from underrepresented populations likely hold values and norms conflicting with popular or dominant cultural practices. This situation often creates tension and stress for those students resulting in an internal dissonance which, if unresolved, leads to student departure. According to Kuh et al., (2007), the major challenge comes in deciding to which cultural norms students should adhere whenever there is a conflict. Additionally, Kuh and Love (2000) challenge institutions on their expectations that students from various cultures should change or exchange their previous culture for the dominant White culture. They strongly suggest that institutions be more inclusive of a variety of cultural variations in order to help students become comfortable.

Another aspect of the cultural perspective is borne out in the discussion of cultural capital and its role in student departure. Braxton (2003) defines cultural capital as a type of knowledge that is not taught in schools but valued by the upper class, which takes the form of “habits, manners, styles of speech, educational credentials, and lifestyle preferences” (p. 325). Access to the most capital resources, including cultural capital, is mostly accessible to the upper class and is used to maintain or expand their capital resources. Individuals who are from homes with greater access to capital resources, are better able to leverage those resources to work to their advantage in acquiring more cultural capital (Berger, 2000b). These individuals feel entitled because of their cultural capital and are endorsed by the school system that rewards more capital. Having access to cultural capital through primary (home) and secondary (school) socialization provides an advantage in attending prestigious colleges and universities. Students with similar cultural capital—even at less prestigious colleges or universities—are more likely to behave in similar ways making their adjustment easier and increasing the likelihood of persistence.

Both institutions and individuals have cultural capital that serves as the basis for making important decisions with respect to admissions, programs, and curricula (Berger, 2000b). Institutions have access to capital resources and use their resources to access more capital resources and enhance their reputation. With more cultural capital, institutions are able to attract particular students with a certain level of cultural capital. In other words, institutions with a strong reputation are able to attract high-performing students who further add to the reputation of the institution, improving the cultural capital

of the institution, which places the institution in a better position to attract greater economic capital (Berger, 2000b).

Individuals with less cultural capital find it difficult to fit in with those who have much greater access to cultural capital (Braxton, 2003). Given that individuals and institutions have access to cultural capital, finding the right match increases the likelihood of persistence (Berger, 2000b). Students with less cultural capital are expected in a similar way to adapt to the cultural milieu of the college environment in order to survive. Institutions have access to greater resources than individuals, so the onus is on the institution to adjust its cumulative cultural capital in order to accommodate students from various backgrounds with different levels of cultural capital (Berger, 2000b).

Organizational perspective. The organizational perspective examines the effect of institutional structures and processes on students' outcomes (Kuh et al., 2007). This perspective takes into account organizational dimensions (Berger, 2000a) such as the financial and physical capacity of the institution, the rules and policies, and institutional type, and how those interact with student success (Kuh et al., 2007). For example, for some institutions, their admissions policies would result in only certain categories or caliber of students being admissible (Berger, 2000a). Additionally, Tinto (1993) as well as Laden, Milem, and Crowson (2000) argue that as selectivity in admissions decisions increases, departure rates decrease. Coincidentally, those who are traditionally under prepared and score lower in the admission processes are often students from minoritized groups. It appears that there is some relationship between the level of selectivity at an

institution and the departure rate for minoritized students at that institution (Byung-Shik, 2008).

Laden et al. (2000) argue that the historical idea of “residentiality” that requires students to separate from their past reality in order to embrace the new collegial life and its values increased the likelihood of departure. If higher education professionals are to view higher education’s role as supporting growth and furthering development in students, that is, helping them become highly educated and fulfilled individuals, then all students would have the cultural capital necessary to succeed (Berger, 2000b).

The main thesis for Laden et al. (2000) relates to strategic choice at the organizational level. They argue that some types of institutions with specific characteristics and certain practices are found to have increased retention. For example, minority-serving institutions or women’s or men’s colleges have better retention rates among students. In many instances, however, the pressure to conform to traditional institutionalized practices in order to gain reputation and status within the hierarchy of higher education leads to greater student departure. This hierarchy of higher education is based largely on institutional image and reputation for high quality achieved through rankings and classifications, faculty profiles, research dollars spent, and size of endowment. A clear example of this phenomenon is the departure rate of Black students at Predominantly White Institutions (PWIs) compared to the departure rate of Black students at Historically Black Colleges and Universities (HBCUs). HBCUs generally have lower rates of departure but some do not have as strong a reputation or occupy as high a position in the hierarchy of higher education as several PWIs (Laden et al., 2000).

The evidence from those kinds of comparisons suggests that institutions have the power to more effectively address some student departure problems. The evidence that supports the use of specific institutional resources to reduce student departure should compel institutions to move away from structural and systemic conformity towards greater differentiation in order to better address these kinds of problems (Laden et al., 2000).

An additional focus of the organizational perspective is on the actions and decisions of leadership in higher education (Braxton, 2003). For Braxton (2003), the leadership styles and decisions embraced by senior administrators influence student engagement and departure on college and university campuses. Consequently, he insists on fairness in the administration of rules and regulations, and clear and inclusive communication with students. With this strong emphasis on accountability, leaders in higher education should feel compelled to view their roles as having an influence on students' outcomes (Braxton, 2003).

Economic perspective. The main emphasis of this perspective is on the financial assessment of the tradeoff between the costs and benefits of college attendance (Kuh et al., 2007). Basically, if students perceive the benefits of participating in higher education to be less than the cost, they are more likely to depart than to persist. Goldin, Katz, and Kusiemko (2006) describe cost of attendance as including tuition, fees, and loss of income—others may include loss of time, particularly for women who may delay the start of a family in order to complete a degree—and benefit as intangible outcomes inclusive of a higher overall quality of life and future earnings. Additionally, intangible outcomes emphasize a quality college experience that distinguishes one institution from the other.

For example, private liberal arts institutions in general provide more enriched out-of-class experiences than large research universities (Kuh et al., 2005). A necessary component of the economic perspective is a cost-benefit analysis of attendance at one institution versus another (Braxton, 2003). This nuanced description fits the illustration by St. John, Cabrera, Nora, and Asker (2000) of a student who opts for private college, selects education as a major, and is on track to creating a large debt. The student has exhausted available funding and is only half way through the program. That student may need to change major to one that will earn high income after graduation or transfer to a more affordable college in order to complete the desired major.

Many students make decisions about degree completion based on economic challenges or economic gains (Braxton, 2003). Particularly for low-income students and those who are independent with families, a great part of their decisions about higher education is based on their economic reality. Notwithstanding, there is evidence to suggest that those who delay or forego immediate economic benefits to attend college gain much more above those who do not participate in college (Baum & Ma, 2007).

Society also enjoys many social and economic returns as a result of higher education through the graduates who are gainfully employed, who embrace their civic responsibilities, and make meaningful contributions to the welfare of their communities (Baum & Ma, 2007). These returns on higher education both on the private and public levels continue to fuel the debate on financing higher education. The discourse is grounded in human capital theory with an emphasis on the return on investment in education (Becker, 1964; Blundell, Dearden, Meghir, & Sianesi, 1999). Furthering the

debate is the question, “who should pay?”, given the benefits that accrue at both levels: individual and society.

A critical issue in the debate on financing higher education is affordability. St. John et al. (2000) discusses “ability to pay” as a major factor for some groups of students, particularly low-income students because they are more price sensitive. For many low-income students, even with current levels of financial aid, there is still a gap between tuition and fees and their available funds. This gap affects their decision to participate and to persist. This situation exists as a by-product of the conundrum of federal aid—in the form of grants—that does not keep pace with increasing tuitions and fees. Mid-income families tend to use federal loans as a means to offset the shortfall but low-income families tend to borrow less or not at all for a variety of reasons.

Limited financial support negatively influences student persistence. Still, Tinto (1993) suggests that students who claim to be leaving college for financial reasons are more likely making excuses for other reasons. St. John et al. (2000) challenges Tinto based on the evidence that suggests that financial factors influence student departure. Given the current realities of inadequate financial aid, St. John et al. (2000) believes students are legitimately dropping out of college because they cannot afford to continue attendance. Paulsen and St. John (1997) as well as St. John, Paulsen, and Starkey (1996), find that finance-related factors, such as tuition, student aid, and other costs—including living costs—account for approximately half of the variance in persistence. St. John et al. (2000) encourage researchers to be mindful of the influence of financial variables and to determine their relationship to student departure. Additionally, they recommend future

research on the impact of limited financial support for some groups of students relative to persistence.

Spiritual perspective. The influence of individual and institutional spirituality on student success is my main focus for the spiritual perspective. This perspective focuses less on the process of spiritual development as a psychological component of student development (Fowler, 1981; Parks, 2000), and more on how success is shaped as a result of one's conscious involvement with spirituality. Spirituality, therefore, is a process of spiritual development as well as an outcome. Of greater concern to me is the influence of spirituality on student success.

I define spirituality based on attributes suggested by Love and Talbot (2009), as a process where one seeks personal authenticity, genuineness, and wholeness; continually transcending one's current locus of centrality; connectedness to self and others through relationships and community; deriving meaning, purpose, and direction in one's life; openness to exploring a relationship with an intangible and pervasive power or essence that exists beyond human existence and rational human knowing. Spirituality therefore is an awareness of self as a spiritual being with the capacity to respond to a force that transcends the limits of human rationality and experience (Astin, 2004). Spirituality in this context is greater than religiosity but is inclusive of religious expressions (Bryant, Choi, & Yasuno, 2003; Love & Talbot, 2009).

Incorporated in this definition are the ideas describe by Fowler (1981) and Parks (2000) that spirituality relates to the discovery of meaning and purpose of one's life. Meaning making is a result of one's response to the force referred to earlier. This

perspective acknowledges that students come to college with varying levels of spirituality (Astin & Astin, 2010; Bryant et al., 2003). Whatever their current level of spirituality, students will experience further spiritual development. Given that participation in college nourishes spiritual development (Fowler, 1981; Parks, 2000), the assumption is that many college students beyond their first semester will have some level of spirituality greater than their starting point.

Within the last decade, college students' interests in and pursuit of spirituality has grown (Astin, Astin, & Lindholm, 2010). This renewed interest has attracted research on various topics related to spirituality. One strand of the research looks at the influence of spirituality on students' outcomes. The findings from those studies have generally supported my reason for adding the spiritual perspective as an important aspect of understanding student success.

One significant study was conducted by University of California, Los Angeles (UCLA). The results from the study of 100,000 students at 236 colleges and universities indicated four key findings for students who were involved in meditation, attending religious activities, or any other form of spiritual observation:

- greater satisfaction with their social life on campus;
- a more positive evaluation of interaction with other students;
- a higher overall satisfaction rating of their college experience; and
- higher grade point averages (GPAs) (Mooney, 2010, p. 198).

Astin (2004) reports that students who are highly spiritual are more committed to the goals of degree completion and were therefore more likely to persist. Generally,

students who participate in spiritual or religious practices value educational activities and see clear connections between their interactions in the college environment and their sense of purpose (Kuh & Gonyea, 2006). These students are better able to identify contextual meaning and interpret experiences that lead to greater personal development (Astin et al., 2010). Spiritually attuned students develop sophisticated mechanisms to help them navigate difficult and challenging encounters (Jeynes, 2003; Sherkat & Ellison, 1999). They exhibit appropriate responses even in negative circumstances and derive learning from those experiences (Love, 2002). This kind of learning contributes to their overall development.

Regneron and Elder (2003), in their study of religious practices and schooling, find that low-income students who have strong religious behaviors also have high academic achievement. They point to a disciplined life created by the teachings of religion as a possible explanation for the correlation. Loury (2004) also suggests that religious groups serve as external buffers for disadvantaged students through the promotion of positive norms and the provision of role models. In spite of the positive relationship between religious behaviors and academic achievement, a later study by Beyerlein (2004) finds that particular religious groups are predisposed to lower academic participation and achievements. Beyerlein attributes this finding to those students' philosophical view of education as secular and occurring in nonreligious contexts. For example, Fundamentalists and Pentecostal Protestant Christians are more likely than other religious groups to have low academic participation and achievement (Beyerlein, 2004). Regneron (2000) reports that the positive relationship between educational

attainment and religious activities does not vary across income groups and appears important in all settings.

According to Astin (2004), spirituality deserves to be nurtured and encouraged in higher education. He attributes inspiration and creativity, which he notes are responsible for true self-awareness and self-expression, to one's spirituality. Given the increase in the numbers of students participating in higher education, an array of religious denominational affiliations and religious beliefs are likely to coexist on campus. This diversity of religious beliefs sometimes creates tensions and unfriendly environments for some students. According to Sherkat (2007), religious factors certainly impact choice of major, courses taken, and successful completion. This was particularly true of students from the Fundamentalist sect. Fundamentalist religious students are more likely than their counterparts to be more selective when choosing college courses and majors in an attempt to avoid conflict with their religious beliefs (Beyerlein, 2004). They are less tolerant of other religious practices, sexual diversity, and secularized lifestyles. With the promotion of spirituality in higher education, the hope is that all students would become more inclusive of all kinds of differences, learn how to interact with all kinds of people, and become more holistic individuals psychologically, sociologically, culturally, and spiritually (Love & Talbot, 2009).

These six perspectives—psychological, sociological, cultural, organizational, spiritual, and economic—present six different lenses through which to view student success. Some key questions that emerge from the discussion of these perspectives further identify and clarify the unique contributions of each perspective to the study of

student success. The key questions are: (a) Do international students have a strong sense of self and are they in control of their behavior? (b) Do international students interact appropriately and adequately with others in college environment? (c) Do international students embrace values and attitudes that are supportive of democratic principles? (d) Does the institution provide a warm and supportive learning environment that promotes holistic student development? (e) Do international students have access to adequate financial support that enables the achievement of their personal goals? and (f) Are international students cognizant of their purpose and shaped by their spirituality? These questions are important for shaping the approach research should take in addressing the various issues raised from each perspective. Another important reason relates to the role these questions should play in the assessment of student experience. The next section will discuss the need and importance of assessment of the college student experience and the instruments available for those kinds of studies.

Assessment of College Student Experience

One of the reasons students enroll in college is to gain knowledge and expertise in a particular discipline so that they will be better able to function successfully in life beyond college. Generally, society expects students, as a result of participation in college, to develop skills and competencies that enable them to make meaningful and enriching contributions to society (Kuh, 1999). Stakeholders have an interest in knowing how well colleges and universities have achieved those expected outcomes (Boyer, 1987).

The desire for specific evidence that higher education institutions meet expectations is not new. For over 3 decades, college impact has been a major concern for college presidents, faculty, and staff, especially student affairs staff (Astin, 1993; Pascarella & Terenzini, 2005). This concern led to continued efforts to provide information on national and local levels about the performance of higher education institutions. The years of continued studies have resulted in the proliferation of several survey instruments focused on the assessment or measurement of the college experience of students enrolled in various types of undergraduate programs (Borden & Owens, 2001). Many of these surveys were developed in response to the work of Chickering and Gamson (1987) that identified seven principles of good practice in undergraduate education: (a) encourages student-faculty contact, (b) encourages cooperation among students, (c) encourages active learning, (d) gives prompt feedback, (e) emphasizes time on task, (f) communicates high expectations, and (g) respects diverse talents and ways of learning.

Of the many surveys that have been developed, Borden and Owens (2001) list a few as specifically focusing on enrolled undergraduate students. Those listed are: (a) the Higher Education Research Institute's (HERI) Cooperative Institutional Research Program (CIRP) Freshman Survey, College Student Survey (CSS), and First-year College Year (FYCY) at University of California Los Angeles (UCLA); (b) Center for Postsecondary Research and Planning's (CPRP) College Student Experience Questionnaire (CSEQ) at Indiana University; (c) Center for the Study of Higher Education's (CSHE) Community College Student Experience Questionnaire (CCSEQ) at

University of Memphis; and (d) National Survey of Student Engagement (NSSE) from CPRP at Indiana University. These surveys are designed to assess the college experience based on students' self-reports of their levels of interactions and gains in college (Borden & Owens, 2001). For the remainder of this section, I focus on the knowledge available on these major surveys.

Surveys for College Student Experience

Cooperative institutional research program surveys (CIRP). CIRP began in 1966 at the American Council of Education (ACE) and later moved to UCLA, where it has been for the past 30 years (Astin, 2003). The CIRP administers three (3) student surveys: Freshman Survey, College Senior Survey (CSS), and Your First College Year (YFCY). The Freshman Survey was first administered in the fall of 1966 with 309 institutions participating (Astin, 2003) and the College Senior Survey (which is then called the College Student Survey) had its first longitudinal comprehensive follow-up in fall 1969 (CCI Research Inc., 2009). The CIRP survey has been the largest data set available on higher education and has been useful for studying student success, persistence and student satisfaction (CCI Research Inc., 2009).

The Freshman Survey was first conceived as a pretest, to serve as a baseline for the follow-up surveys. This approach was to allow researchers to more accurately measure change or impact (Astin, 1985a). Astin (2003) expresses concern for the many cross-sectional research studies that give a snapshot of reality. He cautions that those kinds of studies are misleading and never truly measure change in students as a result of institutional effort. The students who complete the Freshman Survey complete an

additional survey in their last year of college to determine the extent of change, if any, based on their responses.

The College Senior Survey, as a follow up to the Freshman Survey, “focuses on students’ level of satisfaction with various aspects of their college experiences” (Borden & Owens, 2001, p.6). The CSS is described as an instrument for collecting data on the effect of student-faculty interactions, service learning, instructional practices, and leadership development on students’ experiences (CCI Research Inc., 2009). The 36 items on this survey mirror the exact items on the Freshman Survey.

The Your First College Year was designed in 2000 (CCI Research Inc., 2009) both as a follow-up to the Freshman Survey and as an assessment of first-year programs such as residential interest groups, college success courses, and learning communities (Borden & Owens, 2001). In the research on undergraduate experience, these first-year programs emerged as best practices for working with specific groups of students yet had overall benefits for all students. There are 31 items on this survey and local institutions could add another 20 items if they chose to do so.

College student experience questionnaire (CSEQ). This survey is designed based on Pace’s (1984) idea of quality of effort. Pace believes that the outcomes of the college experience are as a result of the time and effort students commit to various educational activities. The CSEQ has been used for over 30 years and was revised several times with its most recent edition, the fourth edition, released in 1998. The main focus of the survey is on the quality of students’ experiences in- and out-of-class as well as to measure progress (Williams, 2007).

According to Williams (2007), college experience refers to events encountered in the collegiate environment. These encounters are facilitated by the institution and are intended for students' learning and development. The current content of the survey reflects those encounters: course learning, library experiences, facilities relate to the Arts, facilities relate to Computer and Information Technology, campus facilities, experiences with faculty, clubs and organizations, experiences in writing, personal experiences, student acquaintances, topics of conversation, information in conversation, and scientific and quantitative experiences (Williams, 2007).

The survey has 151 items. These items consist of 18 background items, 13 activity scales (outlined in previous paragraph), 10 environment scales, 25 estimates of gains scale, and space for an additional 20 questions. The environment scales examine the institution's emphasis on diverse learning and personal development, and relationships with faculty, administration, and peers (Williams, 2007). The estimate of gains scale focuses on five educational goals: general education, literature, arts, and social sciences; personal development and social competence; science and technology; intellectual skills; and vocational competence.

As the third largest national database on college student experience, "the CSEQ has been administered to over 300,000 students" (Gonyea, Kish, Kuh, Muthiah, & Thomas, 2003, p. 3) from over 500 institutions of various institutional types (Williams, 2007). With most alphas above .80, the reliability for the scales range from .72 for campus facilities to .92 for scientific and quantitative experiences. There are 16 factors that approximate the activities and environment scales (Williams, 2007). Relative to more

contemporary surveys of college experience, the CSEQ is longer than other instruments because it addresses more specific experiences in greater detail (Borden & Owens, 2001).

Following the CSEQ, the Community College Student Experience Questionnaire (CCSEQ) was developed in 1996 to assess the college experience of students in two-year institutions. Freidlander, Pace, and Lehman (1990) designed the instrument that has been housed in the Center for the Study of Higher Education at the University of Memphis. The survey design matched that of the CSEQ but emphasized the realities of two-year institutions rather than four-year.

National survey of student engagement (NSSE). NSSE was designed based on the combination of major theories about students' educational activities: quality of effort, involvement, and the principles of good practice in undergraduate education. The main goal of the survey is to assess the level of student engagement in educationally effective practices and the gains achieved as a result of the college experience (Kuh, 2001a). Unlike the other surveys that have been largely developed by individuals, NSSE represents the product of several leading researchers in college impact studies (Kuh, 2001b).

With approximately 68 items on the paper version, the survey covers the areas found on the CSEQ, CIRP freshman and follow-up surveys (CCI Research Inc., 2009). According to Pascarella, Seifert, and Blaich (2008), NSSE measures students' interactions with faculty and peers, intellectual challenge in academic work, involvement in diversity related experience, perception of the collective environment whether supportive or hostile, and specific involvement with both academic and nonacademic

programs. For a survey developed only in 2000, it has rapidly gained acceptance among institutions (Astin, 2003; Irungu, 2010; Wolf-Wendel et al., 2009).

In his article, Kuh (2003) highlights the benchmarks of effective educational practices. These benchmarks were established based on 42 of the items. The benchmarks include (a) levels of academic challenge, (b) active and collaborative learning, (c) student-faculty interaction, (d) enriching educational experiences, and (e) supportive campus environment. The more recently included deep learning scales focus on specific approaches to learning (Nelson Laird, Shoup, & Kuh, 2006; Nelson Laird, Shoup, Kuh, & Schwartz, 2008). The deep learning scales are high-order learning, integrative learning, and reflective learning.

Current validity evidence of NSSE is based on the students' self-reported gains on intellectual and personal development (Hayek, Carini, O'Day, & Kuh, 2002; Kuh & Gonyea, 2003; Pike, 2006; Pike & Kuh, 2005; Pike, Kuh, & Gonyea, 2007; Nelson Laird et al., 2008; Umbach & Kuh, 2003; Umbach & Wawrzynski, 2004; Zhao & Kuh, 2004). Pascarella et al., (2008) caution that while the evidence could be converted to psychometrically reliable scales, findings based on self-reported gains as an outcome or criterion raise questions of internal validity. This concern echoes Astin's (2003) surprise at the return of wide scale acceptance of cross-sectional studies given that these kinds of studies do not present an accurate representation of change as a result of institutional efforts.

The 2011 psychometric properties—most current available figures—reported by NSSE (2013) include acceptable levels of reliability for three benchmarks and

questionable reliabilities for two benchmarks based on George and Mallery (2003) rules of thumb. The Cronbach's alphas with acceptable levels of reliability benchmarks for first-year and senior students—the primary groups to whom NSSE has been administered—are .71 and .74 respectively for student-faculty interaction; .73 and .76 respectively for level of academic challenge; and .79 and .80 respectively for supportive campus environment. The questionable reliability alphas for first-year and senior students are .67 and .67 respectively for active and collaborative learning; and .69 and .66 respectively for enriching educational experiences.

NSSE has been administered nationally and internationally. Canadian higher education institutions administer NSSE to assess the level of student engagement in their institutions (NSSE, 2013). This kind of opportunity is facilitated through two versions of the survey: a paper and a web version. To better accommodate the peculiarity of the Canadian 47 higher education institutions, a Canadian web version of the test in English and French as well as in Spanish has been developed (NSSE, 2013). With such flexibility, NSSE continues to expand in the number of participants. A total of over 1,554 institutions have participated since 2000, and approximately 4 million students have completed the survey since its inception (NSSE, 2013).

Recently, sharp criticism of the validity and reliability of the NSSE instrument in measuring student performance and institutional quality emerged (Campbell & Cabrera, 2011; Lipka, 2010; Porter, 2009; Schmidt, 2009). These researchers contend that some items and response options have vague quantifiers and are opened to varying interpretations which may result in inconsistency among responses. They further argue

that NSSE's benchmarks are not valid predictors of cumulative GPA for the institution included in their study (Campbell & Cabrera, 2011). Sub-arguments in their criticism are about the inability of students to recall accurately their experiences months and even years apart, and the difficulty in measuring attitudes (Lipka, 2010; Porter, 2009; Schmidt, 2009). These concerns serve as reminders to researchers that caution must be exercised in use and interpretations of their results.

Instruments Suited for Assessing International Student College Experience

In order to assess the relative usefulness of one instrument over another, I adapt some useful criteria to guide such analysis. Borden and Owens (2001) offer three criteria for deciding which survey is better suited for an institutional assessment. The criteria are: (a) the appropriateness of the tool for the specific job at hand, (b) the skills and experiences of users, (c) the availability of sufficient financial, personal, and material resources.

In applying these guidelines, I conclude that all four instruments score high based on the first criterion. All the surveys focus on assessing students' experience in college and so satisfy the first criterion. The CSEQ above all the others is noted for the specific details it solicits from students (Borden & Owens, 2001). On the second criterion, CCSEQ is the weakest instrument because the Center for the Study of Higher Education depends on the institutions to organize the administration of the survey during class sessions. Classroom administration includes or necessitates teachers' involvement and some teachers may be less inclined to participate in the process. On the third criterion,

both the CSEQ and NSSE appear to have options for a number of different research arrangements.

NSSE has a few advantages over the other surveys. According to NSSE's (2006) report, engagement has positive effects for all students, which suggests that the instrument may be more flexible in responding to differences among students than the others. Third, the rapid widespread use of the NSSE allows for accurate benchmarking and more compelling comparisons among similar types of institutions. NSSE allows international students to clearly identify themselves, which makes it possible to study more about them as a subpopulation of students. With all these additional benefits, I chose the NSSE for this study on international students. Caution, however, must be exercised in the use of the instrument and the interpretation of the results given the criticisms levied by Campbell and Cabrera (2011) and Porter (2009).

Summary

In this chapter, I reviewed the literature on international students, college impact theories, student success, and assessment of the college experience. Based on the review in this chapter, the major conclusions drawn are: first, the experience of international students in the United States higher education system relative to their success is understudied. Second, international students are a complex group with many diverse needs, challenges, and unique characteristics that must be studied with keen attention given to those differences. Third, student engagement may look different for international students and may not have the same trajectories as for other groups of students. Fourth, the indicators of success for international students may need to be

redefined by each ethnic group of international students to reflect their cultural biases.

Fifth, any assessment instrument used to study international students should allow these students to self-identify in ways that are consistent with their self-concept, and facilitate the reporting of results according to those identifiable characteristics. In so doing, policy and programmatic decisions can be more directly tied to the improvement of the overall undergraduate experience for each subgroup of international students.

CHAPTER 3

Methodology

This chapter describes the design and analysis of this study. First, I articulate the statement of the purpose and the research questions. Second, I describe the research design and conceptual framework. Third, I present the instrument and participants. Finally, there is a presentation of how the data was accessed and analyzed. In the data analysis section, I identify the data source for addressing each research question as well as discuss the limitations, timeline, and cost.

The purpose of this dissertation is to better understand international students' engagement and success. Specifically, I am interested in differences based on race or ethnicity, gender, and institutional type using the 2007 NSSE data. The following research questions will guide this study:

Research Questions

1. How does the engagement of international students in different types of institutions vary based on race or ethnicity and gender?
2. To what extent is there a relationship between engagement and success among international students across racial or ethnic groups?
3. To what extent do institutional factors have a differential relationship with student success for each racial or ethnic group of international students?
4. To what extent do engagement and satisfaction predict international student success across institutional types for each racial or ethnic group?

Null hypothesis 1: There is no difference in the engagement of international students among race or ethnicity and gender across institutional types.

Null hypothesis 2: There is no relationship between engagement and student success across racial or ethnic groups.

Null hypothesis 3: There is no difference in the relationship between institutional factors and student success across racial or ethnic groups.

Null hypothesis 4: There is no difference in the prediction of success for race or ethnicity across institutional type.

Research Design

This quantitative research design utilized data from an existing survey.

Quantitative studies are typically grounded in the positivist-postpositivist tradition of inquiry. Positivism-postpositivism characterizes reality as independent and external to the researcher (Peca, 2000). Lincoln and Guba (2000), in a critique of positivism, argue that positivists view true knowledge as naïve reality over which the researcher has no influence or impact. Positivists are concerned with the process used by researchers to discover knowledge. True knowledge is knowledge of inherent natural laws that improves the quality of human experience. According to positivists, to unearth true knowledge is to use empiricism that requires analysis of “hard data” as evidence to determine cause and effect type relationships (Healy & Perry, 2000). These data are measurable, quantifiable, and observable through the senses (Phillips & Burbules, 2000). In other words, positivist researchers believe that the discovery of truth or knowledge is based on experience through the human senses as they interact with observable evidence.

Phillips and Burbules (2000) assert that the researchers “questing” (p.3) for truth must engage in “competent inquiries” (p. 4) generated through rigor. Rigorous inquiry leads to beliefs that are true and knowledge that is comprised of “warranted assertions” (p. 3). The “regulative ideal” (p .3), also known as the scientific method, becomes the litmus test for rigorous inquiry. The positivist paradigm, therefore, promotes knowing objective knowledge through an objective manner (empiricism) (Peca, 2000). According to Healy and Perry (2000), positivists believe empiricism leads to value-free inquiry that yields meaningful results that are useful over time and in different contexts. Arguably, value free inquiry is unachievable (E. C. Davenport, personal communication, May 15, 2013).

Creswell (2009) suggests that quantitative research designs are most appropriate when testing theories or hypotheses. The major studies on college outcomes and impact generally follow the positivist paradigm with quantitative methods. Many of the previous studies tested Tinto’s (1993) integration theory, Astin’s (1993) involvement theory, and Weidman’s (1989) undergraduate socialization theory. Fewer studies have tested Kuh’s (2001) student engagement theory. In more recent times, however, given the rapid and widespread adoption of NSSE by a growing number of higher education institutions as an evaluative tool used to measure the quality of the undergraduate experience, more researchers are becoming interested in assessing the relevance of engagement to the goals of undergraduate education.

This study in some ways continues the positivist tradition, that is, to examine and report trends of a particular group of international students with the goal of generalizing

to a whole population. The scientific method was applied to increase objectivity and maintain independence between the observed and the observer. Successful completion of this study depended on the careful framing of the key and supporting issues. The next section, therefore, presents the way I conceive the relatedness of the issues and details my approach to fully understand international student engagement and success.

Conceptual Framework

The conceptual framework is informed by the theory of engagement, which states that students enter the college environment with pre college characteristics and interact with the institution through specific behaviors (Kuh, 2001a). Based on the extent of the interactions between students and the institution—that is, the level of engagement—students are more successful or less successful (Kuh et al. 2007). The theory suggests that the more engaged students are with the institution’s programs and activities, the more successful they will be.

Figure 1 illustrates the relationships among the variables that are important in this study. First, students’ background characteristics collectively influence students’ attitudes toward their experiences and the value they place on those experiences. These characteristics also exert independent influence on the outcomes of college. For example, given that international students originate from different regions of the world, they come with varied ideas, orientations, and expectations of educational experience (Frey & Roysircar, 2006). These different expectations lead to different behavioral patterns. These patterns, if studied, can provide useful information about ways to engage these

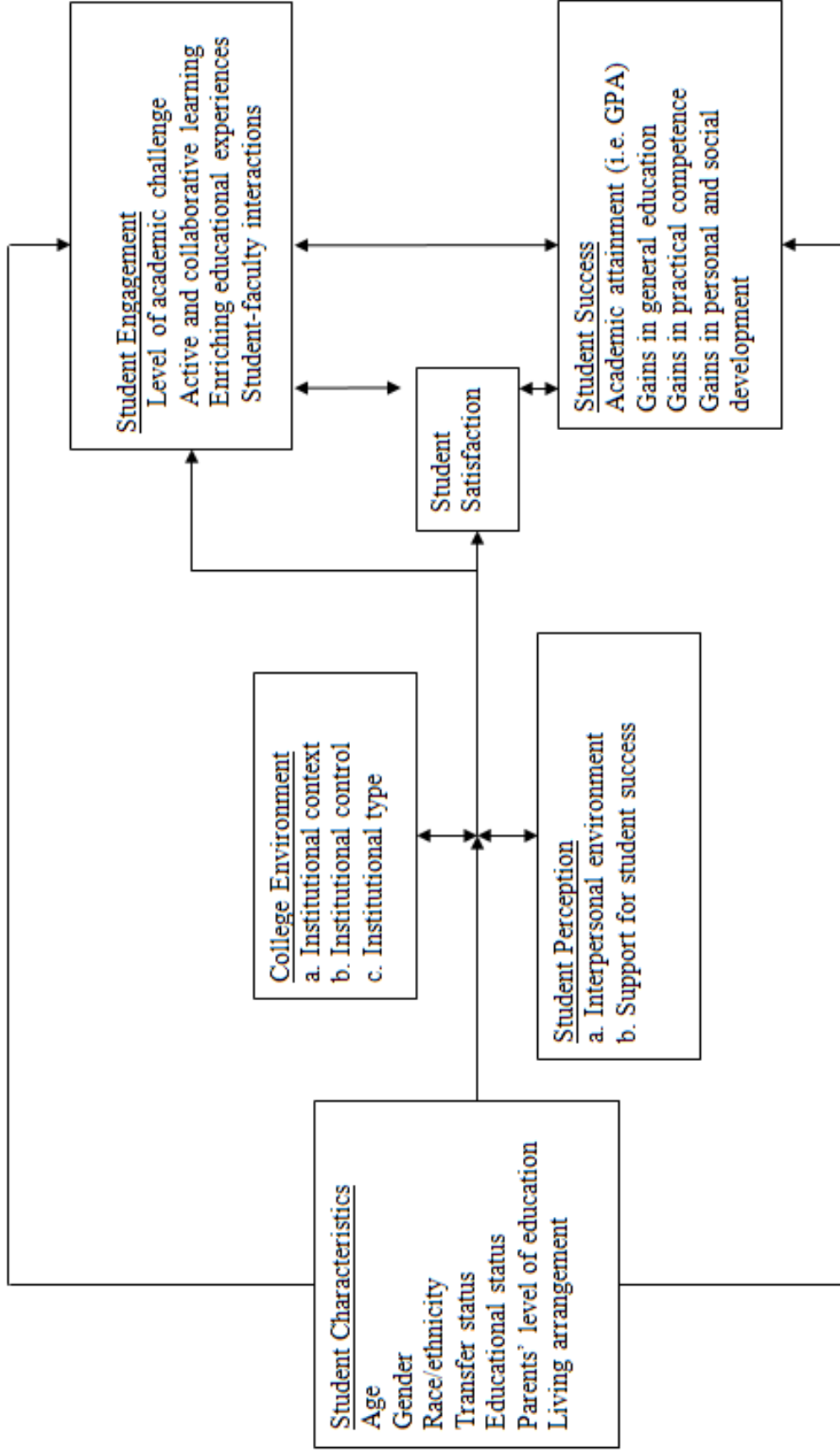


Figure 1. Diagram representing the relationship among variables included in the model predicting student engagement and success for international students.

students. Therefore, background characteristics can have a direct influence on international students' levels of engagement as well as their success in college.

The college environment is made up of two main contexts, the academic and social contexts. The academic context represents those factors that are crucial at the institutional level. Those included in this study are organizational, cultural, and economic. First, organizational factors include type of institution, mission, size, location, selectivity, and control. Second, cultural factors include practices, beliefs, and norms as well as the climate within the environment. Third, economic factors relate to the ability of the institution to minimize costs to student thus making college more affordable through the provision of financial support in the forms of scholarships, grants, and work study. Any underperformance in these areas at an institution negatively affects students' perceptions, satisfaction, engagement, and success.

The social context represents factors that are more crucial at the individual level. These factors include the psychological, sociological, and spiritual. Psychological factors include identity, self-efficacy, and other cognitive capacities. Sociological factors relate to the students' interactions with others on campus and how they build their social skills and network. Students' spirituality refers to their search for meaning and purpose as well as the influence of their beliefs and practices on their daily lives. These are the critical areas in which students can experience growth and development during college and that likely affect their perceptions, satisfaction, engagement, and success.

Institutions attempt to create environments that they believe will support the growth and development of their students. If their students, however, do not perceive

those efforts as beneficial then institutions may do well considering other ways of utilizing their time and resources more effectively. Students' perceptions, therefore, are critical in determining the influence of the college environment on student experience. Three main areas of interests for this study where students form perceptions are the academic environment, social environment, and their learning and development. Of particular importance are international students' attitudes toward the policies and programs institutions advance in order to enhance academic and social development. Additionally, Kuh, Hayek, Carini, Ouimet, Gonyea, and Kennedy (2001) posit that students' self-report of changes in their learning and development is a better indicator than any objective independent assessment of learning. Students' attitudes toward their learning, they argue, serve as a good measure of the quality of their educational experience.

Another aspect of student perception is student satisfaction. Satisfaction in this context refers to a strong positive attitude held by students toward their experiences. This positive perception is formed based on actual encounters within the college environment. If these encounters are meaningful and result in desired outcomes, then students are satisfied. Conversely, if the encounters are less fulfilling and lead to less desirable outcomes, students will be dissatisfied. Conceptually, satisfaction occurs at the point at which the institution meets the needs of students. When students' needs are met by an institution, they are poised for success (Kuh et al., 2007). A proposition, therefore, in this conceptual framework to be tested is that initially—prior to achieving any form of success—satisfaction is a precondition that leads to success. An additional proposition is

that there exist a cyclical relationship between student success and students' levels of satisfaction.

The two outcome variables critical in this framework are student engagement and student success. Student engagement is measured by several constructs presented by NSSE (Kuh, 2001a): level of academic challenge, active and collaborative learning, student interactions with faculty members, and enriching educational experiences. Student success refers to their academic achievement as well as personal and social development through the acquisition of knowledge and skills to function effectively beyond college (Kuh et al., 2007). This use of this definition of success highlights another proposition in this framework to be tested, that is, there is a cyclical relationship between student engagement and student success. The remainder of this chapter will focus on the definition of the variables, description of the survey instrument, participants, data collection and analysis.

Variables

This study will analyze international students' engagement and success based on race or ethnicity, gender, and institutional type. There are two levels of analysis, student and institutional. Following is a delineation of independent and dependent variables at each level.

Student Level

Independent Variables

The independent variables are:

1. Race or Ethnicity: a variable consisting of four groups: Black, White, Asian, and Hispanic. NSSE does not report specific types of biracial and multiracial ethnicities, for example, students who are Black and Hispanic, therefore each group is treated as a discreet category.
2. Gender: a dichotomous variable - male or female.
3. Student satisfaction – refers to students’ overall attitude towards their experiences or encounters during college. Three items form the student satisfaction scale (see Appendix A)

Dependent Variables

The dependent variables are:

1. Student engagement
 - a. Level of academic challenge

The level of academic challenge refers to the intensity of the demand on the intellectual and creative capacities of students to achieve desirable outcomes or complete academic tasks that have been identified as critical for student learning and a quality educational experience (Kezar & Kinzie, 2006; Kuh et al., 2005; Schroeder & Kuh, 2003). This benchmark focuses on survey items related to “time spent preparing for class, amount of reading and writing, and institutional expectations for academic performance” (Kuh et al., 2001, p. 5). Eleven (11) items form the level of academic challenge scale that is used to measure this benchmark (see Appendix A).

- b. Active and collaborative learning

Active and collaborative learning describes the level of students' participation in learning activities as well as students' ability to work with peers or in group settings (Kezar & Kinzie, 2006; Kuh et al., 2005; Schroeder & Kuh, 2003). This benchmark focuses on items related to "participating in class, working collaboratively with other students inside and outside of class, tutoring, and so forth" (Kuh et al., 2001, p.5). Seven (7) items form the active and collaborative learning scale that is used to measure this benchmark (see Appendix A).

c. Student-faculty interaction

Student-faculty interaction refers to the frequency with which students can connect with their faculty as well as the nature and substance of those connections. This benchmark focuses on items related to "talking with faculty members and advisors, discussing ideas from classes with faculty members outside of class, getting prompt feedback on academic performance, and working with faculty members on research projects" (Kuh et al., 2001, p.5). Six (6) items form the student-faculty interaction scale that is used to measure this benchmark (see Appendix A).

d. Enriching educational experiences

Enriching educational experiences emphasize students' exposure to diverse perspectives and interactions in both academic and non-academic programs. Diversity includes religious, political, and sexual differences that inform an individual's outlook on life. This benchmark focuses on items related to "interacting with students with different racial or ethnic backgrounds or with different political opinions or values, using electronic technology, and participating in such activities as internships, community

service, study abroad, co-curricular activities, or a culminating senior experience” (Kuh et al., 2001, p. 5). Eleven (11) items form the enriching educational experiences scale that is used to measure this benchmark (see Appendix A).

2. Student success:

a. Academic attainment

Academic attainment refers to the students’ academic performance while enrolled at their current institutions as measured by their grade point average. A grade of A represents a high grade point average hence high academic attainment, conversely a grade of C- or below represents a low grade point average hence low academic attainment. One (1) item forms the academic attainment scale used to measure this outcome (see Appendix A).

b. Gains in general education

Gains in general education refer to the acquisition of the knowledge and abilities that enhance academic performance in college and beyond (Klien, Kuh, Chun, Hamilton, & Shovelson, 2005). This outcome involves the development of learning skills that enable knowledge construction by challenging assumptions and conclusions (Hersh & Benjamin, 2002). Further, it includes the ability to analyze and synthesize facts so that the facts are meaningful to students. Four (4) items form the gains in general education scale that is used to measure this outcome (see Appendix A).

c. Gains in practical competence

Gains in practical competence refers to the acquisition of knowledge and skills related to job performance, that includes, the ability to analyze quantitative data, utilize

related computing and information technologies, and the ability to function effectively in a dynamic and complex networking environment. Four (4) items form the gains in practical competence scale that is used to measure this outcome (see Appendix A).

d. Gains in personal and social development

Gains in personal and social development focus on growth in self-understanding. Also included is the growth in knowledge of one's abilities and strength of character that leads to greater autonomy and sense of purpose. Further, the development of an ethical code of conduct and embracing civic responsibilities is central to this outcome. Seven (7) items form the gains in personal and social development scale that is used to measure this outcome (see Appendix A).

Control Variables

The control variables are:

1. Age

Age refers to students' chronological age as determined by year of birth.

2. Enrollment status

Enrollment status refers to student enrolling either fulltime or part-time in college.

3. Living situation

Living situation describes student's residential arrangement as either living on campus in dormitories or fraternity or sorority housing, or commuters who live in walking or driving distance from the campus.

4. Selection of Major

Major refers to the students' primary and/or secondary area(s) of study. The categories for majors include arts and humanities, biological sciences, business, education, engineering, physical science, professional, and other.

5. Parents' level of education

Kuh et al. (2007) reiterate the importance of parents' knowledge and experience with college, and the role that plays in students' readiness to participate in college. They also describe the impact research has shown that parents' education have on college outcome.

6. Student perception

Student perception is represented by two scales adopted from Pike's (2006) scalelets. These scales include (a) support for student success with three items, and (b) interpersonal environment with three items (see Appendix A).

7. Transfer Status (for senior international students), as the data were explored, the large number of transfer students among the international cohort was striking and I became curious about the relationship that status might have on the outcome of students engagement and success.

Institutional Level

Independent Variables

1. Institutional Types – (see Appendix A)

Dependent Variables

1. Student engagement grand mean (see prior discussion)
2. Student success grand mean (see prior discussion)

Control Variables

1. Institutional control

Institutional control refers to the institution's governance and authority. The institution can be either private or public.

2. Institutional context

Institutional context, also referred to as college environment, morphed into 3 areas based on the theoretical framework: academic expectations, spiritual and social expectations, and learning and development expectations. Each represented a scale developed from NSSE items as they emerged during the factorial analysis. The scales and their items can be first seen in chapter 4, Table 4.10.1.

Survey Instrument

The National Survey of Student Engagement (NSSE, see Appendix B) was designed to assess the level of student engagement in educationally effective practices and the gains achieved as a result of the college experience (Kuh, 2001a). In a specific description of the structure of NSSE, Kuh (2009) stated that the questionnaire collects information in five categories:

First, it asks students questions about their participation in dozens of educationally purposeful activities... A second set of questions asks students about what the institution requires of them... A third set of questions asks about their perceptions of features of the college environment that are associated with achievement, satisfaction, and persistence... [Further, they are asked about] the support students need to succeed academically and the quality of relations among

various groups on campus...fourth category, students provide information about their background... Finally, students estimate their educational and personal growth since starting college in the areas of general knowledge; intellectual skills; written and oral communication skills; personal, social, and ethical development; and vocational preparation (Kuh, 2009, pp. 11-12).

To facilitate comparisons among groups of institutions, otherwise called consortia, five clusters of NSSE items have been benchmarked as important to learning (Kuh et al., 2001). These benchmarks have been established using 42 items and are namely: (a) levels of academic challenge, (b) active and collaborative learning, (c) student-faculty interaction, (d) enriching educational experiences, and (e) supportive campus environment (Pascarella et al., 2008).

Validity of NSSE relies on students' self-reports (Kuh et al., 2001). Even though this is a common practice for understanding students' attitudes and motivations, Pascarella et al. (2008) raise questions about internal validity. The credibility of data from students' self-reports has been studied extensively and is found to be affected by two problems: (a) students' inability to provide accurate information, and (b) students' unwillingness to provide accurate information (Kuh et al., 2001). Other factors affecting validity are inaccurate estimates of time usage, and students' tendency to overstate their performance, known as the halo effect.

In spite of these challenges, the five conditions under which students' self-reports are considered valid are:

- the information requested is known to the respondents;

- the questions are phrased clearly and unambiguously;
- the questions refer to recent activities;
- the respondents think the questions merit a serious and thoughtful response;
- and
- answering the questions does not threaten, embarrass, or violate the privacy of the respondent or encourage the respondent to respond in socially desirable ways (Kuh et al., 2001, p. 9).

NSSE appears to have been designed to satisfy these conditions.

Researchers outside NSSE are allowed to use the data to conduct further studies to advance knowledge about the quality of the undergraduate experience and to document effective educational practices (Kuh, 2009). The most current dataset available is for 2007; therefore, this current study will adopt those data for analysis. The psychometric properties, as reported by NSSE (2007), include a high degree of reliability for three benchmarks and low reliabilities for two benchmarks. The Cronbach's alphas for the high reliability benchmarks for first-year and senior students—the primary groups to whom NSSE was administered—were .706 and .740 respectively for student-faculty interaction; .728 and .759 respectively for level of academic challenge; and .786 and .795 respectively for supportive campus environment. The low reliability alphas for first-year and senior students were .657 and .669 respectively for active and collaborative learning; and .583 and .646 respectively for enriching educational experiences. Consistent with NSSE's (2007) recommendation, the three benchmarks with higher Cronbach's alphas will be given greater consideration during the analysis. To confirm internal consistency

of benchmarks for the sample to be used in this study, reliability tests will be conducted and reported using .7 as the standard—recommended by McMillan (2008)—for the acceptable level of reliability for a test with large impact.

Participants

According to NSSE (2007), the 2007 administration had approximately 298,083 college students in the United States, of which 5% represented international students. An equal number of first-year and senior students participated in the survey. Caucasian or White students accounted for 74% of respondents while African American or Black and Hispanic students accounted for 7% and 6% respectively. American Indian or Alaska Native students accounted for 5% while the categories “Other” and “Multiracial or Ethnic” accounted for 1% each. More females (65%) participated in the survey than males (35%). Participants age 23 and younger accounted for 82%. Ninety-one percent (91%) were enrolled full-time and 9% part-time. A majority of the students, 55%, commuted while 45% lived in campus or fraternity and sorority housing. A modal category of students’ responses, 49%, reported earning mostly B grades while 42% reported mostly A grades, and 9% reported mostly C grades or lower.

At the institutional level, 593 institutions in the United States participated in the 2007 NSSE administration (NSSE, 2007). Of that number, 59% were private 4-year institutions while 41% were public. Based on the 2005 Carnegie Basic Classification, 6% represented doctoral research universities (very high research activity), 9% represented doctoral research universities (high research activity), 5% represented doctoral or research universities; 26% represented larger master’s programs, 11%

represented medium master's program, 6% represented smaller master's program; 21% represented Arts and Sciences bachelor's colleges, and 15% diverse bachelor's colleges.

For the current study, the total targeted sample was 5738 international students. In the sample, there were 2 research groups: main research group and the cross validation research group. The main research group consisted of first-year international students, $N = 2194$ and senior international students, $N = 2396$. After accounting for missing data, the final numbers used for analysis were $N = 1996$ and 2158 respectively. The cross validation group consisted of first-year $N = 549$ and senior $N = 599$. After accounting for missing data, the final numbers used for analysis were $N = 465$ and 559 respectively.

The four racial or ethnic groups had the following numbers of students: Asian (2,313), White (1,576), Black (617), and Hispanic (1,232). There were 2,443 males and 3,292 females. Ninety percent (90%) of the students were full-time while 11% were part-time. In the sample, there were 126 institutions with 65% private and 35% public. Based on the 2005 Carnegie Basic Classification, 23 represented doctoral research universities (very high research activity), 23 represented doctoral research universities (high research activity), 11 represented doctoral or research universities; 37 represented larger master's programs, 9 represented medium master's program, 6 represented smaller master's program; 12 represented Arts and Sciences bachelor's colleges, and 5 diverse bachelor's colleges.

Data Collection

NSSE has an established procedure for administering the annual survey. After any revision to the survey instrument, NSSE offers a general invitation to all institutions to participate through the paper or web version of the survey in the fall. Institutions, in responding to the invitation, provide enrollment data that allows NSSE's administrators to select a sample and to send the survey to students through the institution's institutional research office in the spring. Completed surveys are returned directly to NSSE where analysis is done and reports generated for participating institutions, consortia or systems. Once completed surveys are received, NSSE begins the calculation of the benchmark means that allows for easy comparisons and reporting among institutions.

NSSE has made provisions for authorized researchers to access a portion of the data for the years currently available. Consistent with NSSE's terms of agreement, a formal request was made of Indiana University Center for Postsecondary Research (IUCPR) for the NSSE 2007 data. NSSE data were used with permission from The Indiana University Center for Postsecondary Research. Concurrently, application was made to the University of Minnesota Institutional Review Board (IRB) for exemption status based on the intention to use previously collected data. Following the approval of proposed research by dissertation committee and the IRB (see Appendix E), I proceeded with data analysis.

Data Analysis

A two-step approach was used for data analysis. The first step was to conduct factor analysis to establish validity of the items included in the scales developed

specifically to measure variables in this study. The second step was to build models to predict student engagement and student success. As described earlier, the sample consisted of both first-year and senior international students. To better account for the two groups, separate analyses were done for first-year and senior international students. This decision was based on research that suggested that the two groups of students had different engagement patterns (Kinzie, Thomas, Palmer, Umbach & Kuh, 2007; Kuh, 2003, 2005; Pascarella & Terenzini, 2005). Therefore, models were built to examine the engagement patterns of the two groups of international students.

Given the nested nature of the data—that is, students were nested in institutions—Hierarchical Linear Modeling (HLM) was employed to estimate the effects of the various types of institution. This approach was consistent with the assumption guiding this study, that institutions exert differential influences on different groups of students. The basis of this assumption was derived from the results of the study on United States institutions' involvement in internationalization conducted by Siaya and Hayward (2003), where different groups of institutions exhibited varying levels of commitment to internationalization. Beyond accounting for institutional effects, it was also important to learn more about how the variations in the level of commitment across institutions relate to student engagement and success.

Using a multi-level approach was justified from two perspectives: theoretical and statistical (Luke, 2004). The theoretical perspective is a simple argument for the consistency of theory and application. Given that this study is multilevel in nature, that is, students—level 1 and institution—level 2, the analytic technique or application should

also be multilevel. The statistical argument suggests multilevel models effectively address the problems associated with traditional individual-level statistical tools or ANOVA/ANCOVA modeling where the effect of grouping the individuals is included in the model. When using the individual-level statistical tools, “all of the un-modeled contextual information ends up pooled into the single individual error term of the model” (Luke, 2004, pp. 6-7). The implications of this error are that (a) there are correlated errors for individuals from the same context, which is a violation of multiple regression assumptions; (b) without context, it is implied that the regression coefficients (effects) occur equally in different contexts. ANOVA or ANCOVA approach, with many more parameters present in the model, sacrifices power and parsimony. Other limitations included exclusion of the random variability in group characteristics, and inflexibility in complex designs and accounting for missing data.

Kinzie et al. (2007) suggests that by using HLM, they were able to more accurately estimate the variance attributable to the student and the variance attributable to the institution in order to model institution level averages using group level characteristics. Another benefit was that they were able to reduce the probability of a Type 1 error that would have occurred if they used Ordinary Least Squares (OLS) regression. An extra benefit of using HLM is that it automatically accounts for sample size within institutions through weighting, eliminating the need to equal sample size across institutions.

In these analyses, level 1 represented students and level 2 represented institutions. For research question 1, HLM was used to perform the group means comparisons. To

facilitate these comparisons, factor variables were created using R software for race and ethnicity and referent group coding to accommodate the following group comparisons: Hispanic, Black, and Asian to White. Gender was coded 1 for male and 2 for female. For institutional types, referent group coding was also used for the 8 Carnegie classifications. Institutional control was dummy coded 0 for public and 1 for private, and the institution mean scores for the college environment scales were included. Institutional types, control, and the 3 college environment scales were all included at level 2.

In research question two, engagement was a predictor variable along with race/ethnicity while success was the response variable. This correlation analysis was also done using HLM. For question three, using HLM, institutional control, institutional types, and college environment scales were included as institutional factors. For research question four, the scale scores for engagement and satisfaction along with race/ethnicity and institutional types were included in the model as predictor variables while success was the response variable. Again, at level 1, race/ethnicity was a factor variable as well as institutional types at level 2.

The control variables were coded: (a) age: 0 for 23 and younger representing traditional students and 1 for 24 and older representing nontraditional students; (b) enrollment status: 0 for part-time and 1 for full-time; (c) living situation: 0 for dormitory and other campus housing including fraternity or sorority house, and 1 for residence within walking and driving distance of campus; (d) major in the case of first-year: 0 for selected and 1 for undecided, and in the case of senior: referent group coding was used

where 1 represented arts and humanities, 2 represented STEM, 3 represented business and professional studies, and 4 represented social science and education; (e) parent's level of education:—mother and father's levels of education were referent group coded where 1 represented high school, 2 represented undergraduate, and 3 represented graduate level education; and (f) mean scores for student perception scales were included.

For HLM, two types of models were required. The first was the student level effects on student engagement and success within institutions. The second was the institution level effects on variations between institutions' mean scores for engagement and success. All categorical variables—race/ethnicity, institutional type, major, age, living situation, institutional control, academic preparation and gender—were used as factors rather than covariates where I ran the models with $k-1$ degrees of freedom.

Summary

In this chapter, I argued that research of this nature was best approached from a positivist-postpositivist tradition, which allowed for the use of a quantitative research design to explore the relationships among key variables. My conceptual framework, therefore, captured those key variables and illustrated the interactions among the variables in predicting student engagement and success. Also, I presented in this chapter, the independent and dependent variables as well as my choice of HLM as the statistical technique for data analysis. The main justification given was based on the nested nature of the data where effects at level—students, are also influenced by the effects at level 2—institutions. The next two chapters present the findings and conclusions with recommendations.

CHAPTER 4

Results

The purpose of this study was to examine the pattern of international student engagement and success based on race/ethnicity, gender, and institutional types. Two cohorts of undergraduate international students were of interest: first-year and senior international students. These two groups were selected because NSSE was intended to measure in a snap-shot, the starting and ending points of student engagement in colleges and universities. In some instances, individual institutions have requested that other academic classes—sophomore and junior—be included. Notwithstanding, this chapter only reports the findings for first-year and senior international students, and will be used to inform the discussions and conclusions in the next chapter. The findings are summarized using tables and figures to enhance visual representation in order to facilitate quick and easy comparisons of model outputs for the groups.

Four research questions and four hypotheses guided this study. The research questions were:

- (1) How does the engagement of international students in different types of institutions vary based on race/ethnicity and gender?
- (2) To what extent is there a relationship between engagement and success among international students across racial or ethnic groups?
- (3) To what extent do institutional factors have a differential relationship with student success for each racial or ethnic group of international students?

(4) to what extent do engagement and satisfaction predict international student success across institutional types for each racial or ethnic group?

The null hypotheses tested were:

Null hypothesis 1: There is no difference in the engagement of international students among race/ethnicity and gender across institutional types.

Null hypothesis 2: There is no relationship between engagement and student success across racial or ethnic groups.

Null hypothesis 3: There is no difference in the relationship between institutional factors and student success across racial or ethnic groups.

Null hypothesis 4: There is no difference in the prediction of success for race/ethnicity across institutional type.

Results for the two groups of students are presented separately, that is, the findings for first-year international students are presented first followed by the findings for the senior students with the exception of the Descriptive Analysis section, where the information for both groups are presented together. The report begins with descriptive statistics to give a general sense of the respondents' profile and response-pattern on the NSSE instrument. Next are the results based on the first step in the research design—Factor Analysis. Here, the factor loadings and the statistics for the model measuring the latent constructs in the conceptual framework are presented. Adjustments to the theorized model based on the output from Confirmatory Factor Analysis are also reflected in the tables. Factor Analysis is followed by the results from the second step—Regression Analysis—for proposed HLM models. The better fitting models are chosen

based on outputs from model comparisons, reduced to an optimal number of statistical predictors, and tested in the final stage of analysis—Cross Validation—in order to validate claims of predictive power. The cross validation sample consisted of both first-year and senior international students also from the NSSE 2007 data collection. The next section, however, will begin the presentation of results for the main research sample of first-year and senior international students.

Descriptive Analyses

The sample size of the first-year international students was $N = 2194$ and senior international students, $N = 2396$. After accounting for missing data, the final numbers used for analysis were $N = 1996$ and 2158 respectively. Table 4.1 summarizes the key characteristics of each group of students.

Asian international students represented the largest subracial/subethnic group for first-year and senior international students at 41% and 40% respectively, while Black international students were the smallest: 10% and 12% respectively. White international students accounted for an even 27% of respondents for the two groups, while Hispanic international students accounted for 22% and 21% respectively. More females (57%) were in this sample than males (43%). The percent difference between males and females for first-year and senior international students were 14% and 16% respectively.

A majority of the students (92% and 52% respectively) were of traditional college age, that meant they were 18 to 23 years old. A large number of senior international students (48%) was of nontraditional college age, ranging from 24 to over 55 years old.

A majority of first-year (94%) and senior international students (84%) were enrolled full time.

First-year international students had 70% of their fathers with college-level education while senior international students had 66%. Additionally, first-year international students had 66% of their mothers with college-level education while senior international students had 58%. In both instances, first-year international students had a higher percent of parents with college level education. A closer examination of parents' college education further revealed first-year international students with 26% fathers and 17% mothers with graduate degrees in contrast to senior international students' 23% fathers and 14% mothers with graduate degrees. Again as a cohort, first-year international students had more parents with graduate degrees than senior international students. Given the statistics, I assert that a majority of these international students were not first generation college students which might be one explanation for international students' ability to pay for a US college education.

A little better than half (53%) of the first-year international students lived in campus housing while a majority (85%) of the senior international students lived off campus. A large majority (96%) of first-year and all senior international students had declared a major. More senior international students (32%) majored in business and professional fields followed by Arts, Humanities, and other liberal arts majors (30%) than the other two categories of majors. Forty-seven percent (47%) of first-year international students reported letter grade A for cumulative GPA compared to 44% senior

Table 4.1

Description of the First-Year and Senior International Undergraduate Sample

Characteristics	First-Years (n = 1996)	Seniors (n = 2158)
	%	%
Race/Ethnicity:		
Asian	41	40
Black	10	12
Hispanic	22	21
White	27	27
Gender:		
Male	43	42
Female	57	58
Age:		
17 - 23 years	92	52
24 - over 55 years	8	48
Enrollment Status:		
Full-time	94	84
Part-time	6	16
Parent Education:		
Father: High School	30	34
Undergraduate	44	43
Graduate	26	23
Mother: High School	34	42
Undergraduate	49	44
Graduate	17	14
Residence:		
On-campus	53	15
Off-campus	47	85
Major: First Year Senior		
Selected	96	30
Undecided	4	21
		32
		17

(continued)

Description of the First-Year and Senior International Undergraduate Sample (continued)

Characteristics	First Years	Seniors
	(n = 1996)	(n = 2158)
	%	%
Grades:		
A	47	44
B	43	48
C	8	7
C- and Below	1	<1
Transfer Status		
Non transfer	86	41
Transfer	14	59
Institution Control		
Private	37	31
Public	63	69
Institutional Types:		
Research Universities (very high research activity)	23	22
Research Universities (high research activity)	18	20
Doctoral/Research Universities	7	9
Masters College and Universities (larger programs)	27	30
Masters Colleges and Universities (medium programs)	8	5
Masters Colleges and Universities (smaller programs)	3	3
Baccalaureate Colleges-Arts & Sciences	11	9
Baccalaureate Colleges-Diverse Fields	3	2

Note. STEM = Science, Technology, Engineering, and Mathematics.

² Under major, the first list of options represents first year students' choice of a major; the second list represents seniors' selected majors.

international students, while 48% senior international students reported a letter grade B for cumulative GPA compared to 43% first-year students. Note, there was only a 4% (FY: 47-43; SR: 48-44) difference between those who reported a cumulative GPA of A or B for both first-year and senior international students. Seniors were 59% transfer students while first-year international students were only 14%.

On an institutional level, the first-year (63%) and senior (69%) international students were more likely to attend public colleges and universities than private ones. Of the 8 types of the Carnegie basic institutional classifications, the largest number of first-year international students (27%) and senior international students (30%) were enrolled at master's colleges and universities with larger programs. In contrast, the least number of first-year international students (approximately 3%) were enrolled at master's colleges and universities with smaller programs, and the least number of senior international students (2%) were enrolled at baccalaureate colleges in diverse fields.

To gain an even more complete understanding of this cohort of international students' attitudes toward, and their perceptions of their college experience in the United States, I examined their responses to the College Student Report (NSSE). Using the range of responses for each variable, I calculated a midpoint and a 95% confidence interval level as well as *p*-values for each difference between the midpoint and the mean for each variable on the instrument. The means above the midpoints were labeled positive while those below were labeled negative. A summary of responses to survey items included in this study are presented in Tables 4.2 and 4.3 for first-year and senior international students respectively. Following are some of the key findings (mean ≥ 75 or ≤ 25 on a 100-point scale) that emerged from the summaries.

As shown in Table 4.2, first-year international students reported that their institutions emphasized spending significant amount of time for study and academic work (80%), they had gains in thinking critically and analytically (80%), and that based on their experience, they would return to the same institutions they are currently attending

Table 4.2

Descriptive Statistics for First-Year International Students' Responses to NSSE Items

NSSE Items	<i>n</i> = 1996	<i>M</i>	<i>SD</i>	95% CI		<i>P</i> -value	Label
				LL	UL		
Spending significant amounts of time studying		80.00	18.75	79.25	80.75	***	Positive
Thinking critically and analytically		80.00	19.50	79.25	81.00	***	Positive
Go to the same institution you are now attending		80.00	19.50	79.25	81.00	***	Positive
Acquiring a broad general education		79.75	19.75	79.00	80.50	***	Positive
Evaluate your entire educational experience		79.75	17.50	79.00	80.50	***	Positive
Using computing and information technology		79.50	21.50	78.75	80.50	***	Positive
Relationships with other students		78.86	19.14	78.00	79.71	***	Positive
Used e-mail to communicate with an instructor		78.50	20.75	77.75	79.25	***	Positive
Analyzing the basic elements of an idea		78.25	19.25	77.50	79.25	***	Positive
Providing the support you need to help you succeed academically		77.50	20.00	76.75	78.50	***	Positive
Relationships with faculty members		76.71	19.00	76.00	77.57	***	Positive
Writing clearly and effectively		76.50	21.25	75.50	77.25	***	Positive
Analyzing quantitative problems		76.50	21.00	75.50	77.25	***	Positive
Integrating ideas/information from various sources		76.25	20.50	75.50	77.25	***	Positive
Applying theories or concepts to practical problems		76.25	21.25	75.50	77.25	***	Positive
Evaluate the quality of academic advising you have		76.25	19.50	75.50	77.25	***	Positive
Working effectively with others		75.00	22.25	74.00	75.75	***	Positive
Learning effectively on your own		74.50	21.50	73.75	75.50	***	Positive
Synthesizing and organizing ideas		74.00	21.00	73.25	75.00	***	Positive
Understanding people of other racial/ethnic group		74.00	23.00	73.00	75.00	***	Positive
Understanding yourself		73.75	22.50	72.75	74.50	***	Positive
Speaking clearly and effectively		73.00	22.50	72.00	73.75	***	Positive
Making judgments about the value of information		72.75	21.25	71.75	73.75	***	Positive
Community service or volunteer work		72.25	25.25	71.25	73.25	***	Positive
Foreign language coursework		71.75	25.25	70.75	72.75	***	Positive
Learned something that changed your understanding		71.50	20.75	70.75	72.50	***	Positive
Relationships with administrative personnel		71.14	21.29	70.29	72.00	***	Positive
Developing a personal code of values and ethics		71.00	23.50	70.00	72.00	***	Positive
Included diverse perspectives in class		70.50	22.25	69.50	71.25	***	Positive
Acquiring job or work-related knowledge and skills		70.50	24.00	69.50	71.50	***	Positive
Tried to better understand someone else's views		70.25	21.75	69.25	71.00	***	Positive
Prepared two or more drafts		70.00	23.50	69.00	71.00	***	Positive
Contact among students from different backgrounds		69.50	23.50	68.50	70.50	***	Positive
Solving complex real-world problems		69.50	22.75	68.75	70.50	***	Positive
Attending campus events and activities		69.25	23.75	68.25	70.25	***	Positive
Practicum, internship, field experience		69.00	19.25	68.25	69.75	***	Positive

(continued)

Descriptive Statistics for First-Year International Students' Responses to NSSE Items (continued)

NSSE Items	<i>n</i> = 1996	<i>M</i>	<i>SD</i>	95% CI		<i>P</i> -value	Label
				LL	UL		
Use electronic medium		67.75	26.00	66.75	68.75	***	Positive
Work hard than you thought you could		67.75	21.25	66.75	68.50	***	Positive
Ask questions in class		67.00	20.75	66.25	68.00	***	Positive
Put together ideas/concepts from different courses		66.50	20.00	65.50	67.25	***	Positive
Discussed ideas with others outside of class		66.00	22.00	65.25	67.00	***	Positive
Conversations with racially diverse students		66.00	26.25	65.00	67.00	***	Positive
Received prompt feedback from faculty		65.00	22.50	64.00	66.00	***	Positive
Exercised or participated in physical fitness activities		65.00	26.75	63.75	66.00	***	Positive
Conversations with ideologically diverse students		64.75	26.00	63.75	66.00	***	Positive
Discussed grades with an instructor		64.25	22.25	63.25	65.00	***	Positive
Number of assigned textbooks		64.20	18.80	63.40	64.80	***	Positive
Study abroad		63.25	25.25	62.00	64.25	0.11	
Contributing to the welfare of your community		63.25	24.75	62.25	64.25	0.08	
Worked with peers on projects during class		63.00	21.50	62.00	63.75	0.18	
Providing the support you need to thrive socially		63.00	23.00	62.00	64.00	0.12	
Examined the strengths and weaknesses of your own views on a topic or issue		62.75	22.25	61.75	63.50	0.35	
Write papers fewer than 5 pages		61.60	21.80	60.60	62.40	***	Positive
Worked with peers outside of class on assignments		60.25	22.25	59.50	61.25	***	Negative
Developing a deepened sense of spirituality		59.50	27.00	58.25	60.50	***	Negative
Helping you cope with your non-academic responsibilities		59.25	24.25	58.25	60.25	***	Negative
Made a presentation		57.50	20.25	56.50	58.25	***	Negative
Participate in a learning community		57.25	26.50	56.00	58.25	***	Negative
Attended an art exhibit, play, dance, music		56.25	22.50	55.25	57.00	***	Negative
Work on research project with outside faculty member		56.25	25.00	55.25	57.50	***	Negative
Hours per week spending on preparing for class		56.25	22.25	55.25	57.13	0.45	
Culminating senior experience		55.00	24.50	53.75	56.00	***	Negative
Talked about career plans with instructor/advisor		54.50	23.25	53.50	55.50	***	Negative
Independent study or self-designed major		51.75	23.50	50.75	52.75	***	Negative
Participated in activities to enhance your spirituality		51.50	27.50	50.25	52.50	***	Negative
Discussed ideas with faculty member outside class		51.00	22.75	50.00	52.00	***	Negative
Tutored or taught other students		47.75	23.50	47.00	48.75	***	Negative
Voting in local, state, or national elections		46.50	25.50	45.50	47.50	***	Negative
Write papers between 5 - 19 pages		45.40	17.40	44.80	46.20	***	Negative
Worked with faculty on noncoursework activities		44.50	22.75	43.50	45.50	***	Negative
Participated in community based project		40.75	21.25	40.00	41.75	***	Negative
Write papers with 20 pages or more		29.40	17.40	28.60	30.00	***	Negative
Participating in co-curricular activities		27.38	18.50	26.63	28.13	***	Negative

Note. CI = confidence interval, LL = lower level, UL = upper level.

Statistical significance was based on the difference between the mean value and the midpoint for every observed variable.

****p* < .001

(80%). They further reported gains in acquisition of a broad general education (79.75), in using computing and information technology (79.5%), and writing clearly and effectively

(76.5%), analyzing quantitative problems (76.5%), and working effectively with others (75%). Students highly rated their overall experience at their institutions (79.5%), as well as the academic advising they received (76.25%). Additionally, they positively rated their relationships with other students (78.9%) and faculty (76.7%).

These students also participated in the writing of papers or projects that required integration of ideas or information from various sources (76%), and used email to communicate with their instructors (78.5%). Their coursework required analysis of basic elements of an idea, experience, or theory (approximately 77.5%), and they applied theories or concepts to practical problems or novel situations (76%). Taken together, students felt that the institution provided the support needed for their academic success. Amidst these very positive responses to their experience, most students also reported that they rarely participated in co-curricular activities (27%). Additionally, students indicated that they wrote 2 or fewer papers of 20 pages or more (29%).

In Table 4.3, similar to first-year international students, senior international students reported gains in using computing and information technology, acquisition of a broad general education, working effectively with others, writing and speaking clearly and effectively, learning effectively on one's own, and acquiring job-related skills and knowledge. Unlike first-years, senior students reported their participation in or plan for participating in practicum, internship, and field experience; community service and volunteer work; and the learning of a foreign language. Additionally, seniors like first-years, highly rated their overall experience at their institution and would study again at

Table 4.3

Descriptive Statistics for Senior International Students' Responses to NSSE Items

NSSE Items	<i>n</i> = 2158	<i>M</i>	<i>SD</i>	95% CI		<i>P</i> -value	Label
				LL	UL		
Used e-mail to communicate with an instructor		83.00	19.00	82.25	83.75	***	Positive
Using computing and information technology		83.00	20.00	82.25	84.00	***	Positive
Acquiring a broad general education		82.50	19.75	81.75	83.25	***	Positive
Integrating ideas/information from various sources		82.25	18.50	81.50	83.00	***	Positive
Analyzing the basic elements of an idea		81.25	18.75	80.50	82.00	***	Positive
Spending significant amounts of time studying		80.75	18.75	79.75	81.50	***	Positive
Evaluate your entire educational experience		80.75	18.25	80.00	81.50	***	Positive
Number of assigned textbooks		80.50	25.75	79.25	81.50	***	Positive
Go to the same institution you are now attending		79.50	20.50	78.75	80.25	***	Positive
Relationships with other students		79.29	18.86	78.57	80.14	***	Positive
Applying theories or concepts to practical problems		78.75	20.50	78.00	79.75	***	Positive
Working effectively with others		78.75	21.00	78.00	79.75	***	Positive
Relationships with faculty members		78.43	18.86	77.71	79.29	***	Positive
Writing clearly and effectively		78.25	20.75	77.50	79.25	***	Positive
Practicum, internship, field experience		77.50	24.50	76.50	78.50	***	Positive
Synthesizing and organizing ideas		77.00	20.25	76.00	77.75	***	Positive
Learning effectively on your own		77.00	21.75	76.00	77.75	***	Positive
Speaking clearly and effectively		76.00	21.50	75.00	76.75	***	Positive
Acquiring job or work-related knowledge and skills		75.75	23.00	74.75	76.75	***	Positive
Community service or volunteer work		75.50	28.00	74.50	76.75	***	Positive
Foreign language coursework		75.00	27.00	73.75	76.00	***	Positive
Making judgments about the value of information		74.50	21.75	73.75	75.50	***	Positive
Providing the support you need to help you succeed academically		74.50	21.00	73.75	75.50	***	Positive
Understanding yourself		74.00	23.75	73.00	75.00	***	Positive
Evaluate the quality of academic advising you have		73.75	22.00	72.75	74.50	***	Positive
Understanding people of other racial/ethnic group		73.50	23.75	72.50	74.25	***	Positive
Developing a personal code of values and ethics		72.50	24.00	71.50	73.50	***	Positive
Put together ideas/concepts from different courses		72.25	19.50	71.25	73.00	***	Positive
Solving complex real-world problems		72.25	23.00	71.25	73.00	***	Positive
Learned something that changed your understanding		71.75	20.75	71.00	72.50	***	Positive
Use electronic medium		70.75	25.50	69.75	71.75	***	Positive
Ask questions in class		70.50	21.75	69.50	71.25	***	Positive
Tried to better understand someone else's views		70.50	21.50	69.50	71.25	***	Positive
Included diverse perspectives in class		70.00	22.50	69.00	70.75	***	Positive
Work hard than you thought you could		70.00	21.00	69.00	70.75	***	Positive
Discussed ideas with others outside of class		69.25	21.50	68.25	70.00	***	Positive
Made a presentation		69.00	21.00	68.25	70.00	***	Positive
Worked with peers outside of class on assignments		69.00	22.50	68.00	69.75	***	Positive
Culminating senior experience		69.00	26.00	68.00	70.00	***	Positive

(continued)

Descriptive Statistics for Senior International Students' Responses to NSSE Items (continued)

NSSE Items	<i>n</i> = 2158	<i>M</i>	<i>SD</i>	95% CI		<i>P</i> -value	Label
				LL	UL		
Relationships with administrative personnel		69.00	22.86	68.14	70.00	***	Positive
Received prompt feedback from faculty		67.25	21.00	66.25	68.00	***	Positive
Conversations with racially diverse students		67.25	25.75	66.25	68.50	***	Positive
Thinking critically and analytically		66.80	15.00	66.20	67.40	***	Positive
Prepared two or more drafts		66.50	23.00	65.75	67.50	***	Positive
Discussed grades with an instructor		66.50	21.75	65.75	67.50	***	Positive
Attending campus events and activities		66.25	24.25	65.25	67.25	***	Positive
Contact among students from different backgrounds		65.75	25.00	64.75	66.75	***	Positive
Conversations with ideologically diverse students		64.75	24.75	63.75	65.75	***	Positive
Examined the strengths and weaknesses of your own views on a topic or issue		64.75	22.00	63.75	65.50	***	Positive
Worked with peers on projects during class		64.25	22.00	63.50	65.25	***	Positive
Contributing to the welfare of your community		64.25	25.25	63.25	65.25	***	Positive
Study abroad		64.00	26.50	62.75	65.00	***	Positive
Analyzing quantitative problems		63.40	16.60	62.60	64.00	***	Positive
Exercised or participated in physical fitness activities		62.25	26.00	61.25	63.25	0.34	
Work on research project with outside faculty member		61.25	26.75	60.25	62.25	**	Negative
Write papers fewer than 5 pages		60.80	23.80	59.80	61.80	*	Positive
Independent study or self-designed major		59.75	25.75	58.75	60.75	***	Negative
Talked about career plans with instructor/advisor		59.00	23.00	58.25	60.00	***	Negative
Providing the support you need to thrive socially		57.75	23.75	56.75	58.75	***	Negative
Developing a deepened sense of spirituality		56.25	28.00	55.00	57.25	***	Negative
Hours per week spending on preparing for class		55.63	23.25	54.75	56.63	0.12	
Attended an art exhibit, play, dance, music		54.25	22.25	53.25	55.00	***	Negative
Helping you cope with your non-academic responsibilities		54.25	24.50	53.25	55.25	***	Negative
Write papers between 5 - 19 pages		52.60	20.00	51.80	53.40	***	Negative
Tutored or taught other students		52.25	24.25	51.25	53.25	***	Negative
Participated in activities to enhance your spirituality		51.75	27.25	50.50	52.75	***	Negative
Voting in local, state, or national elections		47.50	26.00	46.25	48.50	***	Negative
Participate in a learning community		47.40	21.20	46.60	48.40	***	Negative
Worked with faculty on noncoursework activities		47.25	23.25	46.25	48.25	***	Negative
Participated in community based project		44.25	22.50	43.25	45.00	***	Negative
Write papers with 20 pages or more		36.60	19.00	35.80	37.40	***	Negative
Discussed ideas with faculty member outside class		27.38	11.25	27.00	27.88	***	Negative
Participating in co-curricular activities		26.50	18.75	25.75	27.25	***	Negative

Note. CI = confidence interval, LL = lower level, UL = upper level.

Statistical significance was based on the difference between the mean value and the midpoint for every observed variable.

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

the same institution. They also positively rated their relationships with other students and faculty.

Senior students further reported working on papers or projects that required integrating ideas or information from various sources (approximately 82%); used email to communicate with their instructors (approximately 83%); engaged in coursework that required analysis of the basic elements of an idea, experience, or theory through case studies and situational analyses (approximately 81%); and synthesized and organized ideas, information or experiences into new, more complex interpretations and relationships (approximately 77%). These students read 5 -10 assigned textbooks or book-length packs of course materials (approximately 81%) and felt that their institutions emphasized spending significant amount of time for study and academic work.

As part of my description of the sample, I wanted to determine how this group of international students compared with the general student population who participated in 2007, hence I decided to conduct *t*-tests. The *t*-tests compared international students mean scores on the engagement benchmarks with the general student population mean scores for 2007. The 2007 population benchmark scores were available in NSSE's (2007) online reports of averages. Tables 4.4 and 4.5 display the *t*-tests the results of *p*-value less than .01 which is the lower end of Fisher's scale providing greater bounds or control against the family-wise error rate (also known as Type 1 error rate), that is, falsely rejecting a null hypothesis.

As seen in Table 4.4, there was a significant difference between first-year international students and the 2007 first-year population for level of academic challenge with $t(1995) = 10.02, p < .001$; active and collaborative learning with $t(1995) = 5.43, p < .001$; enriching educational experience with $t(1995) = -11.12, p < .001$; student-faculty

Table 4.4

Comparison of First-Year International Students with NSSE First-Year Student Population in 2007

Variable	International Students		NSSE 2007 Population		95% CI		<i>t</i> -value	Sig. Level
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	LL	UL		
Level of Academic Challenge	54.76	13.43	51.75	13.26	54.17	55.35	10.02	***
Active and Collaborative Learning	43.31	16.97	41.25	16.19	42.57	44.06	5.43	***
Enriching Educational Experiences	29.14	14.77	32.82	17.84	28.50	29.79	-11.12	***
Student-Faculty Interactions	35.64	19.31	27.09	13.06	34.79	36.49	19.78	***
Supportive Campus Environment	63.55	18.32	59.85	18.57	62.75	64.35	9.02	***

Note. *M* = mean, *SD* = standard deviation, CI=Confidence Interval, LL=Lower Limit, UL=Upper Limit Sig. = significance.

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

interactions with $t(1995) = 19.78, p < .001$; and supportive campus environment $t(1995) = 9.02, p < .001$. From the t-test results, it appeared that first-year international students were more engaged on all benchmarks than the 2007 first-year student population except on enriching educational experiences which was also significant but in the negative direction.

In Table 4.5, there was a significant difference between senior international students and the senior 2007 population on the level of academic challenge with $t(2157) = 6.35, p < .001$; enriching educational experience with $t(2157) = -2.69, p = .01$; student-faculty interactions with $t(2157) = 3.65, p < .001$; and supportive campus environment with $t(2157) = 8.48, p < .001$. Senior international students were more engaged than the general population of senior students in 2007 based on three benchmarks: level of academic challenge, student-faculty interactions, and supportive campus environment but less engaged on enriching educational experiences, and showed no difference on active and collaborative learning with $t(2157) = 0.52, p = 0.602$. Both first-year and senior

Table 4.5

Comparison of Senior International Students with NSSE Senior Student Population in 2007

Variable	International Students		NSSE 2007 Population		95% CI		<i>t</i> -value	Sig. Level
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	LL	UL		
Level of Academic Challenge	57.58	14.39	55.61	14.16	56.97	58.19	6.35	***
Active and Collaborative Learning	50.27	17.24	50.08	17.27	49.55	51.00	0.52	
Enriching Educational Experiences	40.07	19.52	41.20	20.73	39.25	40.89	-2.69	**
Student-Faculty Interactions	41.53	20.78	39.89	17.81	40.65	42.40	3.65	***
Supportive Campus Environment	60.39	19.05	56.91	19.08	59.58	61.19	8.48	***

Note. *M* = mean, *SD* = standard deviation, CI=Confidence Interval, LL=Lower Limit, UL=Upper Limit Sig. = significance.

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

international students scored lower on the enriching educational experiences benchmark.

Overall, the pattern of performance for this sample of international students on the engagement benchmarks confirms that international students are different, and in fact, that they are more engaged than the NSSE 2007 student population.

Factor Analysis

The next step in my analysis was to determine the extent to which the structure of the engagement benchmarks as purported by NSSE, fit my sample data. I used Confirmatory Factor Analysis (CFA) to test and validate the item structure of each benchmark and those results are presented in Tables 4.6 and 4.7. First, I compared the reliability alphas for the NSSE 2007 population and the current sample using the results displayed in Tables 4.6 and 4.7, specifically the columns labeled: Population Model (Pop. Model) and Initial Model.

On closer observation of the factor loadings for level of academic challenge for initial and modified models in Tables 4.6 and 4.7, notice was taken of the low loadings

Table 4.6

Factor Loadings for Confirmatory Factor Analysis on Student Engagement Scales for First-Year Students

Scale	Pop. Model	Initial Model	Mod. Model
Level of Academic Challenge $\alpha =$	0.73	0.70	0.70
Synthesizing and organizing ideas, information, or experiences		0.75	0.76
Analyzing the basic elements of an idea, experience, or theory		0.71	0.72
Making judgments about the value of information, arguments, or methods		0.71	0.71
Applying theories or concepts to practical problems or in new situations		0.68	0.68
Number of hours per week spending on preparing for class		0.31	0.30
Number of written papers or reports between 5 and 19 pages		0.29	0.28
Number of assigned textbooks, books, or packs of course readings		0.21	0.20
Number of written papers or reports of 20 pages or more		0.19	0.17
Number of written papers or reports of fewer than 5 pages		0.16	0.15
Worked harder than you thought you could to meet standards		0.47	0.47
Spending significant amounts of time studying and on academic work		0.42	0.19
Active and Collaborative Learning $\alpha =$	0.66	0.69	0.69
Worked with classmates outside of class to prepare class assignments		0.54	0.53
Asked questions in class		0.51	0.51
Made a class presentation		0.49	0.49
Participated in a community-based project as part of a regular course		0.50	0.50
Tutored or taught other students (paid or voluntary)		0.46	0.45
Worked with other students on projects during class		0.42	0.42
Discussed ideas from readings or classes with others outside of class		0.54	0.52
Used an electronic medium to discuss or complete an assignment			0.36
Enriching Educational Experiences $\alpha =$	0.58	0.67	0.69
Work on research project with outside faculty member			0.60
Culminating senior experience		0.39	0.57
Participate in a learning community or some other formal program		0.37	0.51
Independent study or self-designed major		0.29	0.47
Practicum, internship, field experience, co-op experience, or clinicals		0.38	0.47
Community service or volunteer work		0.40	0.47
Study abroad		0.31	0.41
Foreign language coursework		0.32	0.39
Had serious conversations with students who are very different from you		0.62	0.31

(continued)

Factor Loadings for Confirmatory Factor Analysis on Student Engagement Scales for First-Year Students (continued)

Scale	Pop.	Initial	Mod.
	Model	Model	Model
Had serious conversations with students of a different race or ethnicity		0.61	0.28
Participating in co-curricular activities		0.29	0.27
Encouraging contact among students from different backgrounds		0.48	
Used an electronic medium to discuss or complete an assignment		0.32	
Student-Faculty Interactions	$\alpha =$ 0.71	0.74	0.74
Discussed ideas from readings/classes with faculty outside of class		0.72	0.71
Talked about career plans with a faculty member or advisor		0.65	0.66
Worked with faculty members on activities other than coursework		0.62	0.62
Discussed grades or assignments with an instructor		0.60	0.60
Received prompt written or oral feedback from faculty on performance		0.55	0.56
Work on research project with outside faculty member		0.33	
Supportive Campus Environment	$\alpha =$ 0.79	0.77	0.81
Providing the support you need to thrive socially		0.66	0.74
Providing the support you need to help you succeed academically		0.62	0.67
Encouraging contact among students from different backgrounds			0.67
Helping you cope with your non-academic responsibilities		0.60	0.65
Attending campus events and activities			0.61
Relationships with administrative personnel and offices		0.65	0.44
Relationships with other students		0.58	0.42
Relationships with faculty members		0.65	0.41
Spending significant amounts of time studying and on academic work			0.38

Note. Pop= population, α =Cronbach Alpha, Mod.=modified

Table 4.6.1

Goodness of Fit Indices for NSSE and Modified Models for First-Year International Students

	NSSE		Modified	
	Model	90% CI	Model	90% CI
RMSEA	0.073	0.072 0.074	0.048	0.047 0.049
NFI	0.91		0.96	
CFI	0.92		0.96	
SRMR	0.16		0.14	
PCLOSE	0.00		1.00	

Note. RMSEA = root mean square error of approximation, NFI = normed fit index, CFI = comparative fit index, SRMR = standardized root mean square residual

for a small number of items. These loadings were less than .2 and could be considered too small and their contributions negligible in the model. In spite of their low loadings, I decided to keep them in the model based on the level of statistical significance confirmed by CFA and modification indices. In both instances, the items were statistically significant at p -value $< .001$ for first-year and seniors.

As presented in Table 4.6, three of the benchmarks' reliability alphas had greater numerical values for first-year international students than for the population: namely, active and collaborative learning, enriching educational experiences, and student-faculty interactions, while two had lower numerical values: level of academic challenge and supportive campus environment. Table 4.7 presents greater numerical alpha values for three of the benchmarks for senior international students than the population: namely, active and collaborative learning, enriching educational experiences, and student-faculty interactions and lower numerical alpha values for level of academic challenge and supportive campus environment. The reliability alpha for each benchmark—especially when rounded to one decimal place—achieves .7 as recommended by McMillan (2008). Whereas for NSSE 2007 population, NSSE (2007) cautioned the use of the active and collaborative learning and enriching educational experiences benchmarks, that caution was less of a concern for this sample, particularly for senior international students, and overall when using the modified models.

Second, I used several Goodness of Fit indices to determine the extent to which the two models fit the data. Based on Kenny's (2011) discussion on measuring fit, I selected the following fit indices for this study: root mean square error of approximation

(RMSEA), PCLOSE, Normed Fit Index (NFI), Comparative Fit Index (CFI), and Standardized Root Mean square Residual (SRMR). The popular Chi Square statistic was intentionally omitted based on Kenny's (2011) exposition of the nature of the test relative to large sample. He explained that with N larger than 400, the Chi Square statistic would always result in statistical significance hence it is a common practice for researchers to not use N quite as large. According to Bentler and Bonett (1980), Normed Fit Index (NFI) and Comparative Fit Index greater than .90 were acceptable fit indices, but in a more recent study, Marsh, Hau, and Wen (2004) suggested NFI and CFI fit indices of .95 as the cut off value. For this study, Marsh et al.'s (2004) proposed cut off value of .95 for NFI, CFI and SRMR .08 were adopted as acceptable fit. Additionally, RMSEA $<$.05 and PCLOSE 1 were recommended by Kenny (2011) and were also used as further measures of acceptable fit.

The Goodness of Fit indices for NSSE's model (Initial Model in both Tables 4.6 and 4.7) and Modified Model for first-year and senior international students are presented in Tables 4.6.1 and 4.7.1 respectively. The Goodness of Fit indices for the NSSE model with RMSEA of .073, SRMR .16, PCLOSE .00, NFI .91, and CFI .92 presented in Table 4.6.1 suggest that the model fell below the acceptable level established earlier. Table 4.7.1 also shows that the model fit fell below the previously established level of acceptability with NFI .92, CFI .93, SRMR .06, RMSEA of .066 and PCLOSE of .00 for the senior international student sample data.

Given the displayed results in Tables 4.6.1 and 4.7.1, and the cut off values established by Marsh et al. (2004) and Kenny (2011), I concluded that the initial NSSE

Table 4.7

Factor Loadings for Confirmatory Factor Analysis on Student Engagement Scales For Senior International Students

Scale		Pop. Model	Initial Model	Mod. Model
Level of Academic Challenge	$\alpha =$	0.76	0.72	0.72
Synthesizing and organizing ideas, information, or experiences			0.77	0.78
Analyzing the basic elements of an idea, experience, or theory			0.75	0.76
Making judgments about the value of information, arguments, or methods			0.69	0.69
Applying theories or concepts to practical problems or in new situations			0.68	0.68
Worked harder than you thought you could to meet standards			0.44	0.43
Number of hours per week spending on preparing for class			0.25	0.24
Number of written papers or reports between 5 and 19 pages			0.28	0.24
Number of written papers or reports of 20 pages or more			0.25	0.22
Number of assigned textbooks, books, or packs of course readings			0.20	0.19
Number of written papers or reports of fewer than 5 pages			0.21	0.19
Spending significant amounts of time studying and on academic work			0.37	0.19
Active and Collaborative Learning	$\alpha =$	0.67	0.68	0.68
Participated in a community-based project as part of a regular course			0.53	0.54
Discussed ideas from readings or classes with others outside of class			0.52	0.50
Worked with classmates outside of class to prepare class assignments			0.48	0.48
Asked questions in class			0.48	0.48
Made a class presentation			0.48	0.48
Tutored or taught other students (paid or voluntary)			0.45	0.45
Worked with other students on projects during class			0.42	0.42
Enriching Educational Experiences	$\alpha =$	0.65	0.70	0.73
Work on research project with outside faculty member				0.55
Participate in a learning community or some other formal program			0.44	0.55
Community service or volunteer work			0.44	0.53
Practicum, internship, field experience, co-op experience, or clinicals			0.40	0.50
Culminating senior experience			0.39	0.47
Independent study or self-designed major			0.31	0.41
Had serious conversations with students who are very different from you			0.64	0.40
Foreign language coursework			0.33	0.38
Had serious conversations with students of a different race or ethnicity			0.63	0.38
Participating in co-curricular activities			0.32	0.35
Study abroad			0.27	0.30
Used an electronic medium to discuss or complete an assignment			0.32	0.29
Encouraging contact among students from different backgrounds			0.39	0.06

(continued)

Factor Loadings for Confirmatory Factor Analysis on Student Engagement Scales For Senior International Students (continued)

Scale	Pop. Model	Initial Model	Mod. Model
Student-Faculty Interactions	$\alpha =$ 0.74	0.75	0.77
Discussed ideas from readings/classes with faculty outside of class		0.74	0.74
Talked about career plans with a faculty member or advisor		0.70	0.71
Worked with faculty members on activities other than coursework		0.63	0.62
Discussed grades or assignments with an instructor		0.58	0.59
Received prompt written or oral feedback from faculty on performance		0.54	0.54
Work on research project with outside faculty member		0.36	
Supportive Campus Environment	$\alpha =$ 0.80	0.77	0.79
Providing the support you need to help you succeed academically		0.68	0.73
Providing the support you need to thrive socially		0.68	0.66
Encouraging contact among students from different backgrounds			0.63
Helping you cope with your non-academic responsibilities		0.61	0.58
Relationships with faculty members		0.62	0.54
Relationships with administrative personnel and offices		0.59	0.51
Relationships with other students		0.53	0.50
Spending significant amounts of time studying and on academic work			0.38

Note. Pop= population, α =Cronbach Alpha, Mod.=modified

Table 4.7.1

Goodness of Fit Indices for NSSE and Modified Models for Senior International Students

	NSSE		Modified	
	Model	90% CI	Model	90% CI
RMSEA	0.066	0.065 0.067	0.048	0.047 0.049
NFI	0.92		0.95	
CFI	0.93		0.96	
SRMR	0.06		0.05	
PCLOSE	0.00		1.00	

Note. RMSEA = root mean square error of approximation, NFI = normed fit index, CFI = comparative fit index, SRMR = standardized root mean square residual

models for first-year and senior international students were less than an optimal fit for the data and that the modified models presented better fits. The modified model for first-year international students had NFI and CFI of .96, RMSEA of .048, and PCLOSE 1 while the

improved model for senior international students had NFI .95, CFI .96, SRMR .05, RMSEA .048, and PCLOSE 1. The modifications made to the initial models using modification indices were based solely on mathematical calculations done in LISREL 8.80 but the overall models remained consistent with Kuh's (2001a) engagement theory.

Third, I focused on the intercorrelation among all the benchmark scales for first-year and senior international students to determine the strength of each relationship. In Tables 4.8 and 4.9, the correlations of benchmark scales are reported for the initial and modified models for first-year and senior international students respectively. For both samples of students, there were high correlations among the scales. In the case of first-year international students, the correlations ranged from .52 to .88 for initial model and .42 to .89 for the modified model. For senior international students, the correlations ranged from .40 to .86 for initial model and .34 to .86 for the modified model.

Table 4.8

Correlation of NSSE Engagement Scales for Initial and Modified Models for First-Year International Students

Construct	LAC	ACL	EEE	SFI	SCE
Level of Academic Challenge	1.00	0.65	0.42	0.59	0.47
Active and Collaborative Learning	0.64	1.00	0.55	0.89	0.51
Enriching Educational Experiences	0.60	0.74	1.00	0.54	0.40
Student-Faculty Interaction	0.61	0.88	0.70	1.00	0.52
Supportive Campus Environment	0.52	0.53	0.53	0.54	1.00

Note. Modified model correlations presented in top half of table and initial model in the bottom half.

The strongest correlation among the scales was between active and collaborative learning and student-faculty interactions which was relatively the same for both models for first-year ($r = .88/.89$) and senior ($r = .86/.86$) international students. Conversely, the

weakest correlation for the first-year international student's initial module was between the level of academic challenge and supportive campus environment ($r = .52$), and in the modified model; supportive campus environment and enriching educational experiences ($r = .40$). The weakest correlation for senior international students in the initial model was between the enriching educational experiences and supportive campus environment ($r = .40$), and in the modified model; enriching educational experiences and supportive campus environment ($r = .34$).

Table 4.9

Correlation of NSSE Engagement Scales for Initial and Modified Models for Senior International Students

Construct	LAC	ACL	EEE	SFI	SCE
Level of Academic Challenge	1.00	0.61	0.36	0.50	0.39
Active and Collaborative Learning	0.63	1.00	0.66	0.86	0.49
Enriching Educational Experiences	0.48	0.76	1.00	0.59	0.34
Student-Faculty Interaction	0.52	0.86	0.67	1.00	0.52
Supportive Campus Environment	0.40	0.48	0.42	0.53	1.00

Note. Modified model correlations presented in top half of table and initial model in the bottom half.

In the case of the relatively high correlation between active and collaborative learning and student-faculty interactions where questions could be raised about whether the two scales were redundant or measured uniquely different aspects of the latent construct—an argument made by Campbell and Cabrera (2011)—I decided to proceed with both scales. My decision was based on arguments proffered by Bollen and Lennox (1991) where they suggested that appropriate use of correlation results was based on the variables' classification as effect or causal indicators. They argued that a causal indicator was a variable that impacted the latent construct and not the reverse while an effect

indicator was one where the impact moved from the latent construct to the variable. They further asserted that in a structural equation context where causal indicators measured a multidimensional construct—for example, engagement—that it was acceptable to have high, low or even negative correlations because the validity of the indicators were usually determined by other factors that were beyond the scope of the given study. They cautioned that a high correlation, however, made it difficult to distinguish between the impact of one variable versus the other on the latent construct thus should be given due consideration but was not an issue to be resolved.

For this study, based on Kuh's (2001a) conceptualization of the benchmarks that I adopted and included with slight modifications in the conceptual framework, it was a plausible conclusion that the benchmarks in fact related to engagement. Hence, the benchmarks could be referred to as causal indicators for the purposes of correlation analysis and interpretation. Therefore, given the arguments provided, I decided that the correlations found in this study did not present a challenge for HLM so I proceeded.

Next I wanted to determine if reliability for the scales actually improved. This kind of assessment is possible through the use of Spearman–Brown prediction (1910) formula where reliability, as a function of the number of items in a scale, increases or decreases in relation to an increase or decrease in the number of items. The prediction formula calculates an average score that when given a specific number of items will determine reliability. Therefore, to use the formula, first, I calculated the average reliability alpha for the scale. Second, I plugged the average reliability alpha along with the number of items from the modified scale into the original formula to calculate the

predicted reliability. Third, I compared the results from the computation to the output for Cronbach Alpha in the tables produced by R Statistical Software. If the Cronbach Alpha were higher then I concluded that the scale's reliability, in fact, improved but if the Cronbach Alpha were lower then I concluded that the scale got worst.

The reliability alphas for the scales in the first-year model based on the Spearman–Brown formula were: level of academic challenge $\alpha=.70$, active and collaborative learning $\alpha=.72$, enriching educational experiences $\alpha=.65$, student–faculty interaction $\alpha=.70$ and supportive campus environment $\alpha=.83$. For the senior model, the alphas were: level of academic challenge $\alpha=.72$, active and collaborative learning $\alpha=.68$, enriching educational experiences $\alpha=.72$, student-faculty interaction $\alpha=.71$ and supportive campus environment $\alpha=.82$. When these alphas were compared to the alphas for the modified models displayed in Tables 4.6 and 4.7, it became obvious that only enriching educational experiences and student–faculty interactions changed by .04 for both scales in the case of first-year international students, and by .01 and .06 respectively, in the case of senior international students. The scales for active and collaborative learning and supportive campus environment were below the predicted levels by .03 and .02 respectively for first-year international students while the supportive campus environment scale for senior international student was below by .03. Overall, the reliability alphas improved for some scales, fell below the expectations for others, and still others remained unchanged.

I moved from a general assessment of the NSSE benchmarks and student engagement as defined by Kuh (2001a, 2003) to a more specific examination of the way I

conceptualized the process of international students' engagement and to test the postulations represented in my conceptual framework presented in the previous chapter. In that framework, I proposed that students' background characteristics, in addition to influencing directly student engagement and success, intersect with students' perceptions and the realities of the college environment to influence students' satisfaction that in turn has a relationship with student engagement and success. Again, I began with CFA to test my hypothesized relationships within the model and measure the latent constructs. The factor analysis literature identified CFA as the appropriate analysis for theory testing over exploratory analysis which better suited theory development (Kyle, 1999).

In Tables 4.10 and 4.10.1, I present the first-year international students' results from CFA on the scales measuring student engagement, success, student perception, satisfaction, and college environment while Tables 4.11 and 4.11.1 present CFA results on the scales for senior international students. Tables 4.10.2 and 4.11.2 present the Goodness of Fit indices for the initial and modified models for first-year and senior international students respectively. Next was to determine the effect of model modification on the reliability alphas.

As before, I employed Spearman–Brown (1910) prediction formula to determine the degree of improvement on the reliability alphas. The formula–based calculations yielded the following values for the first-year international students' reliability alphas–engagement: level of academic challenge $\alpha = .66$, active and collaborative learning $\alpha = .76$, enriching educational experiences $\alpha = .65$, student–faculty interactions $\alpha = .77$; success: gains in general education $\alpha = .89$, gains in personal and social development α

Table 4.10

Factor Loadings for Confirmatory Factor Analysis on Student Engagement and Success Scales for Initial and New Models for First-Year International Students

Scale	Initial Model	New Model
Level of Academic Challenge	0.70	0.65
Synthesizing and organizing ideas, information, or experiences	0.77	0.78
Analyzing the basic elements of an idea, experience, or theory	0.72	0.72
Making judgments about the value of information, arguments, or methods	0.72	0.72
Applying theories or concepts to practical problems or in new situations	0.69	0.69
Number of hours per week spending on preparing for class	0.28	0.28
Number of written papers or reports between 5 and 19 pages	0.28	0.26
Number of assigned textbooks, books, or packs of course readings	0.20	0.18
Number of written papers or reports of 20 pages or more	0.18	0.16
Number of written papers or reports of fewer than 5 pages	0.15	0.14
Active and Collaborative Learning	0.69	0.76
Worked with peers outside of class on assignments	0.53	0.53
Put together ideas or concepts from different courses for assignment	0.53	0.53
Asked questions in class or contributed to class discussions	0.50	0.51
Made a class presentation	0.49	0.50
Participated in a community-based project as part of a regular course	0.50	0.50
Tutored or taught other students (paid or voluntary)	0.45	0.45
Worked with other students on projects during class	0.42	0.43
Discussed ideas from readings or classes with others outside of class	0.53	0.39
Used an electronic medium to discuss or complete an assignment	0.38	0.38
Included diverse perspectives in class discussions or writing assignments		0.31
Enriching Educational Experiences	0.67	0.69
Work on research project with outside faculty member	0.55	0.59
Culminating senior experience	0.53	0.58
Participate in a learning community or some other formal program	0.48	0.51
Independent study or self-designed major	0.29	0.48
Practicum, internship, field experience, co-op experience, or clinicals	0.46	0.47
Community service or volunteer work	0.45	0.46
Study abroad	0.42	0.41
Foreign language coursework	0.40	0.39
Had serious conversations with students who are very different from you	0.45	0.31

(continued)

Factor Loadings for Confirmatory Factor Analysis on Student Engagement and Success Scales for Initial and New Models for First-Year International Students (continued)

Scale	Initial Model	New Model
Had serious conversations with students of a different race or ethnicity	0.42	0.27
Participating in co-curricular activities	0.28	0.24
Student-Faculty Interactions	0.74	0.78
Discussed ideas from readings/classes with faculty outside of class	0.70	0.71
Talked about career plans with a faculty member or advisor	0.64	0.64
Worked with faculty members on activities other than coursework	0.62	0.62
Discussed grades or assignments with an instructor	0.60	0.60
Received prompt written or oral feedback from faculty on performance	0.56	0.57
Worked harder than you thought you could to meet standards	0.49	0.48
Used e-mail to communicate with an instructor		0.34
Success		
Gains in General Education	0.84	0.83
Thinking critically and analytically	0.83	0.81
Speaking clearly and effectively	0.79	0.76
Writing clearly and effectively	0.79	0.75
Acquiring a broad general education	0.53	0.72
Spending significant amounts of time studying and on academic work	0.48	0.41
Learning effectively on your own		0.31
Gains in Personal and Social Development	0.86	0.86
Developing a personal code of values and ethics	0.81	0.83
Solving complex real-world problems	0.80	0.80
Understanding yourself	0.77	0.75
Understanding people of other racial and ethnic backgrounds	0.75	0.74
Learning effectively on your own	0.70	0.42
Gains in Practical Competencies	0.78	0.78
Working effectively with others	0.76	0.78
Analyzing quantitative problems	0.79	0.77
Using computing and information technology	0.68	0.69
Acquiring job or work-related knowledge and skills	0.63	0.64
Gains in Civic and Democratic Development		0.68
Contributing to the welfare of your community		0.80
Developing a deepened sense of spirituality		0.69
Voting in local, state, or national elections		0.46
Attending campus events and activities		0.12

Note. The titles of latent constructs are boldfaced. Cronbach Alpha for each subscale is also boldfaced

Table 4.10.1

Factor Loadings for Confirmatory Factor Analysis on Student Perception, Satisfaction, and College Environment Scales for Initial and New Models First-Year International Students

Scale	Initial Model	New Model
Student Perception		
Support for Student Success	0.76	0.82
Providing the support you need to thrive socially	0.82	0.73
Encouraging contact among students from different backgrounds	0.72	0.73
Helping you cope with your non-academic responsibilities	0.76	0.65
Providing the support you need to help you succeed academically	0.63	0.62
Attending campus events and activities		0.55
Interpersonal Environment	0.77	0.77
Relationships with faculty members	0.84	0.84
Relationships with administrative personnel and offices	0.78	0.78
Relationships with other students	0.64	0.64
Satisfaction		
Student Satisfaction	0.76	0.76
Evaluate your entire educational experience at this institution	0.83	0.83
Evaluate the quality of academic advising you have received	0.70	0.70
Would you go to the same institution you are now attending?	0.71	0.70
College Environment		
Civic and Community Engagement Expectations	0.68	
Contributing to the welfare of your community	0.76	
Developing a deepened sense of spirituality	0.68	
Voting in local, state, or national elections	0.44	
Attending campus events and activities	0.46	
Academic Expectations	0.68	0.68
Integrating ideas or information from various sources	0.66	0.78
Prepared two or more drafts	0.47	0.49
Included diverse perspectives in class	0.60	0.37
Put together ideas/concepts from different courses	0.58	0.21
Used e-mail to communicate with an instructor	0.45	0.20
Spiritual and Social Expectations	0.48	0.48
Attended an art exhibit, play, dance, music, theater/other performance	0.55	0.56
Participated in activities to enhance your spirituality	0.56	0.48
Exercised or participated in physical fitness activities	0.37	0.37
Learning and Development Expectations	0.78	0.76
Tried to better understand someone else's views	0.79	0.79
Examined the strengths and weaknesses of your own views on a topic or	0.74	0.73
Learned something that changed the way you understand an issue or	0.71	0.71
Discussed ideas from your readings/classes with others outside of class		0.28

Note. The titles of latent constructs are boldface. Cronbach Alpha for each subscale is also boldface

=.81, gains in practical competence $\alpha = .78$, gains in civic and democratic development $\alpha = .68$; student perception: support for student success $\alpha = .84$, interpersonal environment $\alpha = .77$; satisfaction $\alpha = .76$; college environment: academic expectations $\alpha = .68$, spiritual and social expectations $\alpha = .48$, and learning and development expectations $\alpha = .83$.

For senior international students, the results are as follows—engagement: level of academic challenge $\alpha = .69$, active and collaborative learning $\alpha = .68$, enriching educational experiences $\alpha = .73$, student-faculty interaction $\alpha = .71$; success: gains in general education $\alpha = .85$, gains in personal and social development $\alpha = .78$, gains in practical competence $\alpha = .79$, gains in civic and democratic development $\alpha = .69$; perception: support for student success $\alpha = .87$, interpersonal and environment $\alpha = .73$; satisfaction $\alpha = .79$; college environment: academic expectations $\alpha = .68$, spiritual and social expectations $\alpha = .44$, and learning and development expectations $\alpha = .80$.

The results were compared to the alphas for the modified models in Tables 4.10, 4.10.1, 4.11, and 4.11.1. From the comparison, it appeared that enriching educational experiences, student–faculty interactions, and personal and social development were the only three scales with alphas that improved for the first-year international students while active and collaborative learning, enriching educational experiences, student–faculty interactions, gains in personal and social development, and gains in civic and democratic development scales improved for senior international students. In the initial model for first-year international students, the civic and community engagement expectation scale was included as one of the measures for college environment. After the modification indices, however, this scale exhibited a strong correlation with the success scales and no

correlation with college environment scales in the final model. This shift is presented in Tables 4.10, 4.10.1, and 4.12.

In Tables 4.10 and 4.10.1, the Cronbach Alphas for the 14 scales in the new model ranged from .48 to .86. For first-year international students, five of the Cronbach Alphas fell below the .7 recommendation by McMillan (2008), namely, level of academic challenge $\alpha=.65$, enriching educational experiences $\alpha=.69$, gains in civic and democratic development $\alpha=.68$, academic expectations $\alpha=.68$, and spiritual and social expectations $\alpha=.48$. For senior international students (Tables 4.11 and 4.11.1), four Cronbach Alphas also fell below the .7 standard for scales: level of academic challenge $\alpha=.69$, active and collaborative learning $\alpha=.69$, academic expectations $\alpha=.68$, and spiritual and social expectations $\alpha=.44$.

I was less concerned with the scales that were much closer to .7, hence the two scales of greater concern were first-year international students' level of academic challenge, and spiritual and social expectations for both first-year and senior international students. I decided to proceed with the two scales in spite of their low reliability alphas for the following reasons: (a) level of academic challenge is a reliable scale for the overall population at .73 (NSSE, 2007) as well as for international students at .70 (see Tables 4.6 and 4.7) hence the discrepancy observed was believed to be unique to this sample; (b) spiritual and social expectations was the only scale that captured the spiritual expressions of the students that demonstrated their levels of engagement with or commitment to spirituality even though it failed to achieve a desirable level. Given the centrality of spirituality in my theoretical framework presented in chapter 2, and its

Table 4.11

Factor Loadings for Confirmatory Factor Analysis on Student Engagement and Success Scales for Initial and New Models for Senior International Students

Scale	Initial	New
Engagement		
Level of Academic Challenge	0.71	0.69
Synthesizing and organizing ideas, information, or experiences	0.78	0.79
Analyzing the basic elements of an idea, experience, or theory	0.75	0.77
Making judgments about the value of information, arguments, or methods	0.69	0.69
Applying theories or concepts to practical problems or in new situations	0.68	0.67
Number of written papers or reports between 5 and 19 pages	0.28	0.25
Number of hours per week spending on preparing for class	0.25	0.23
Number of written papers or reports of 20 pages or more	0.25	0.23
Spending significant amounts of time studying and on academic work	0.34	0.21
Number of written papers or reports of fewer than 5 pages	0.21	0.19
Number of assigned textbooks, books, or packs of course readings	0.21	0.19
Worked harder than you thought you could to meet standards	0.43	
Active and Collaborative Learning	0.68	0.69
Made a class presentation	0.47	0.55
Asked questions in class or contributed to class discussions	0.49	0.52
Discussed ideas from readings or classes with others outside of class	0.52	0.52
Worked with peers outside of class on assignments	0.47	0.50
Worked harder than you thought you could to meet standards		0.50
Worked with other students on projects during class	0.41	0.46
Used an electronic medium to discuss or complete an assignment		0.39
Participated in a community-based project as part of a regular course	0.53	
Tutored or taught other students (paid or voluntary)	0.45	
Enriching Educational Experiences	0.70	0.78
Participated in a community-based project as part of a regular course		0.59
Participate in a learning community or some other formal program	0.42	0.53
Work on research project with outside faculty member		0.52
Tutored or taught other students (paid or voluntary)		0.50
Community service or volunteer work	0.42	0.47
Culminating senior experience	0.39	0.43
Practicum, internship, field experience, co-op experience, or clinicals	0.38	0.41
Had serious conversations with students who are very different from you	0.68	0.41

(continued)

Factor Loadings for Confirmatory Factor Analysis on Student Engagement and Success Scales for Initial and New Models for Senior International Students (continued)

Scale	Initial Model	New Model
Worked with faculty members on activities other than coursework		0.41
Independent study or self-designed major	0.30	0.39
Had serious conversations with students of a different race or ethnicity	0.67	0.38
Participating in co-curricular activities	0.32	0.37
Foreign language coursework	0.32	0.32
Study abroad	0.27	0.27
Encouraging contact among students from different backgrounds	0.36	
Used an electronic medium to discuss or complete an assignment	0.32	
Student-Faculty Interaction	0.75	0.77
Discussed ideas from readings/classes with faculty outside of class	0.74	0.76
Talked about career plans with a faculty member or advisor	0.70	0.70
Discussed grades or assignments with an instructor	0.59	0.60
Received prompt written or oral feedback from faculty on performance	0.53	0.54
Worked with faculty members on activities other than coursework	0.62	0.31
Work on research project with outside faculty member	0.37	
Success		
Gains in General Education	0.85	0.85
Thinking critically and analytically	0.84	0.80
Speaking clearly and effectively	0.83	0.79
Writing clearly and effectively	0.82	0.77
Acquiring a broad general education	0.54	0.67
Gains in Personal and Social Development	0.86	0.85
Developing a personal code of values and ethics	0.82	0.83
Understanding yourself	0.81	0.78
Understanding people of other racial and ethnic backgrounds	0.75	0.75
Learning effectively on your own	0.70	0.67
Acquiring a broad general education	0.15	
Working effectively with others	0.22	
Thinking critically and analytically	-0.04	
Gains in Practical Competencies	0.79	0.79
Working effectively with others	0.59	0.78
Analyzing quantitative problems	0.77	0.72
Using computing and information technology	0.71	0.70
Acquiring job or work-related knowledge and skills	0.64	0.65
Gains in Civic and Democratic Development	0.74	0.73
Contributing to the welfare of your community	0.75	0.71
Developing a deepened sense of spirituality	0.63	0.58
Voting in local, state, or national elections	0.41	0.38
Solving complex real-world problems	0.79	0.77
Attending campus events and activities	0.44	

Note. The titles of latent constructs are boldface. Cronbach Alpha for each subscale is also boldface

Table 4.11.1

Factor Loadings for Confirmatory Factor Analysis on Student Perception, Satisfaction, and College Environment Scales for Initial and New Models for Senior International Students

Scale	Initial Model	New Model
Student Perception		
Support for Student Success	0.77	0.80
Providing the support you need to thrive socially	0.83	0.77
Encouraging contact among students from different backgrounds		0.72
Helping you cope with your non-academic responsibilities	0.75	0.66
Providing the support you need to help you succeed academically	0.64	0.51
Attending campus events and activities		0.60
Spending significant amounts of time studying and on academic work		0.31
Interpersonal Environment	0.73	0.73
Relationships with faculty members	0.79	0.79
Relationships with administrative personnel and offices	0.73	0.73
Relationships with other students	0.59	0.59
Satisfaction		
Student Satisfaction	0.79	0.79
Evaluate your entire educational experience at this institution	0.86	0.86
Evaluate the quality of academic advising you have received	0.68	0.69
Would you go to the same institution you are now attending?	0.75	0.75
Providing the support you need to help you succeed academically		0.25
College Environment		
Academic Expectations ^a	0.68	0.68
Integrating ideas or information from various sources	0.71	0.96
Prepared two or more drafts	0.49	0.45
Included diverse perspectives in class	0.56	0.51
Put together ideas/concepts from different courses	0.57	0.61
Used e-mail to communicate with an instructor	0.44	0.45
Spiritual and Social Expectations	0.44	0.44
Attended an art exhibit, play, dance, music, theater/other performance	0.49	0.49
Participated in activities to enhance your spirituality	0.40	0.46
Exercised or participated in physical fitness activities	0.49	0.40
Learning and Development Expectations	0.80	0.80
Tried to better understand someone else's views	0.80	0.81
Examined the strengths and weaknesses of your own views on a topic or	0.73	0.73
Learned something that changed the way you understand an issue or	0.73	0.72

Note. The titles of latent constructs are boldface. Cronbach Alpha for each subscale is also boldface

^a Academic Expectations become an Engagement Scale for Seniors: Integration and Consolidation of Diverse Ideas.

Table 4.10.2

*Goodness of Fit Indices for Initial and Modified Models
for First-Year International Students*

	Initial	90% CI	Modified	90% CI
RMSEA	0.059	0.059 0.060	0.049	0.048 0.050
NFI	0.94		0.95	
CFI	0.94		0.96	
SRMR	0.17		0.16	
PCLOSE	1.00		1.00	

Note. RMSEA = root mean square error of approximation, NFI = normed fit index, CFI = comparative fit index, SRMR = standardized root mean square residual

relationship with academic achievement—a measure of success—it was important to be included as a measure in the overall model.

To determine the fit of the models, I examined once again the accompanying Goodness of Fit indices. The initial model for first-year international students had fit indices below but very close to the cut off values suggested by Marsh et al. (2004) with the exception of the RMSEA of .059. Again, through the use of modification indices—computed as part of the CFA output in LISREL—a modified model is achieved with fit indices at or above Marsh et al.'s (2004) cut off value of .95, RSMEA of .049 at a 90% CI with the true score falling between .048 and .05 and SRMR of .16 which is twice as high the level of acceptability. Therefore, the first-year international students' modified model was selected for HLM.

Similar to the first-year initial model, the senior international students' initial model fit indices were very close to but below the cut off values chosen for this study with RMSEA greater than .05. Through the use of modification indices, the modified model presented improved fit indices that fell within the cut off range and RMSEA of

Table 4.11.2

Goodness of Fit Indices for Initial and Modified Models for Senior International Students

	Initial		Modified	
	Model	90% CI	Model	90% CI
RMSEA	0.060	0.060 0.061	0.048	0.047 0.049
NFI	0.93		0.95	
CFI	0.93		0.96	
SRMR	0.15		0.15	
PCLOSE	1.00		1.00	

Note. RMSEA = root mean square error of approximation, NFI = normed fit index, CFI = comparative fit index, SRMR = standardized root mean square residual

.048 at a 90% CI with the true score falling between .047 and .049, SRMR was .15 almost twice as high as the level of acceptability. Therefore, the senior international students' modified model was selected for HLM.

Tables 4.12 and 4.13 present the correlations for the major constructs in this study for first-year and senior international students. A quick examination of the first-year correlations revealed minor changes between the initial and modified models. The largest difference in the correlations was $\pm .35$ between any two scales. I prefer to highlight the difference for learning and development expectations. Two changes in relationship occurred: (a) civic and community engagement no longer had a relationship with the campus environment scales in the modified model so was renamed based on the strong correlation with success scales—gains in civic and democratic development; and (b) spiritual and social expectations displayed a weak relationship with support for student success in the modified model. In the modified model for first-year international students, the correlations for engagement ranged from $r = .41$ to $r = .89$, for success ranged

from $r = .65$ to $r = .94$, for student perception and satisfaction ranged from $r = .51$ to $r = .59$, and for college environment ranged from $r = .29$ to $r = .62$.

Table 4.12

Correlation of Scales Measuring Engagement, Success, Student Perception, and College Environment for First-Year International Students in the Initial and Modified Models

Construct	Correlation			
Engagement	LAC	ACL	EEE	SFI
Level of Academic Challenge	1.00	0.64	0.41	0.60
Active and Collaborative Learning	0.63	1.00	0.56	0.89
Enriching Educational Experiences	0.47	0.62	1.00	0.53
Student-Faculty Interactions	0.60	0.90	0.58	1.00
Success	GENED	GPSD	GPC	GCDD
General Education	1.00	0.73	0.94	0.65
Personal and Social Development	0.73	1.00	0.74	0.86
Practical Competence	0.95	0.77	1.00	0.67
Civic and Democratic Development	0.63	0.83	0.66	1.00
Student Perception	SSS	IPE	SFT	SSE
Support for Student Success	1.00	0.51	0.57	0.17
Interpersonal Environment	0.48	1.00	0.59	0.00
Satisfaction	0.53	0.59	1.00	0.00
Spiritual and Social Expectations	0.00	0.00	0.00	1.00
College Environment	ACE	SSE	LOT	CCE
Academic Expectations	1.00	0.29	0.47	0.00
Spiritual and Social Expectations	0.40	1.00	0.62	0.00
Learning and Development Expectations	0.59	0.63	1.00	0.00
Civic and Community Engagement Expectations ^a	0.07	0.35	0.10	1.00

Note. a. Civic and community engagement expectations scale under college environment is renamed civic and democratic development scale under success.

b. Modified model correlations presented in top half of table and initial model in the bottom half.

c. Spiritual and Social Expectations showed a very weak connection with the student perception scales.

The first-year international students' correlations that required further examination were (1) the relationships between academic expectations and spiritual and social development with $r = .29$ that represented an almost weak relationship, (2) general education and practical competence $r = .94$, (3) personal and social development and civic and democratic development with $r = .86$, and (4) active and collaborative learning and student-faculty interaction with $r = .89$. The last three correlations could raise questions about discriminant validity of scale. Here, I applied the arguments by Bollen and Lennox (1991) regarding causal indicators. They purported that where a mix of causal and effect indicators are present, high, low or even negative correlations are plausible.

The senior international students' correlations revealed relatively small changes between the initial and modified models. The largest difference in the correlations was approximately $\pm .06$ between any two scales except in the correlations for academic expectations and the other college environment scales that displayed a more drastic change (see Table 4.13). Three changes in relationships occurred between academic expectations and the engagement scales, support for student success and campus environment scales, and gains in civic and democratic development now shared a perfect correlation with gains in personal and social development. For senior international students, in the modified model, the correlations for engagement ranged from $r = .38$ to $r = .92$, for success ranged from $r = .73$ to $r = 1.00$, for student perception and satisfaction ranged from $r = .54$ to $r = .65$, and for college environment ranged from $r = .00$ to $r = .70$.

Table 4.13

Correlation of Scales Measuring Engagement, Success, Student Perception, and College Environment for Senior International Students in the Initial and Modified Models

Construct	Correlation				
Engagement	LAC	ACL	EEE	SFI	ACE^c
Level of Academic Challenge	1.00	0.63	0.38	0.48	0.68
Active and Collaborative Learning	0.65	1.00	0.56	0.77	0.92
Enriching Educational Experiences	0.42	0.59	1.00	0.64	0.50
Student-Faculty Interactions	0.49	0.78	0.68	1.00	0.73
Academic Expectations	0.00	0.00	0.00	0.00	1.00
Success	GENED	GPSD	GPC	GCDD	
General Education	1.00	0.74	0.92	0.73	
Personal and Social Development	0.71	1.00	0.74	1.00	
Practical Competence	0.91	0.73	1.00	0.78	
Civic and Democratic Development	0.67	0.95	0.74	1.00	
Student Perception	SSS	IPE	SFT		
Support for Student Success	1.00	0.54	0.56		
Interpersonal Environment	0.53	1.00	0.65		
Satisfaction	0.55	0.64	1.00		
College Environment	ACE	SSE	LOT	CCE	
Academic Expectations	1.00	0.03	0.09	0.00	
Spiritual and Social Expectations	0.34	1.00	0.70	0.13	
Learning and Development Expectations	0.51	0.68	1.00	0.06	
Civic and Community Engagement Expectations ^a	0.06	0.21	0.07	1.00	

Note . a. Civic and community engagement expectations scale under college environment is renamed civic and democratic development scale under success.

b. Modified model correlations presented in top half of table and initial model in the bottom half.

c. Academic expectations (ACE) exhibited a weakened relationship with college environment scales but a much stronger correlation with the engagement scales.

Senior international students clearly responded differently to the hypothesized model. For example, academic expectations exhibited very low correlations with the other college environment scales; $r = .03$ and $r = .09$, yet a much stronger relationship with the engagement scales; $r = .68$, $r = .92$, $r = .53$, and $r = .73$. Another example was the perfect correlation between personal and social development and civic and democratic

development scales; $r = 1.00$. This perfect correlation, however, does not mean that are the same. To resolve these two issues presented in the results, first, I decided to use academic expectations as an additional measure of student engagement for senior international students and renamed it—integration and consolidation of diverse ideas. Second, I decided to keep gains in civic and democratic development as a measure of success based on my content validity assessment.

The next two tables display the major variables in this study with some psychometric, statistical and distributional properties for both first-year and senior international students. In comparing the results displayed in Tables 4.14 and 4.15, it appears that the mean scores for first-year and senior international students were different for engagement and success but comparable scores for satisfaction, perception, and college environment to first-year international students. A statistical test would do well to prove or disprove these observations. Additionally, the reliability alphas were numerically different for senior and first-year international students. The skewness for both groups fell within the acceptable range of -1 to +1 for all the scales except enriching educational experiences specifically for first-year international students.

The presence of skewness—positive or negative—implies that the distributions were not perfectly normal. One of the assumptions of regression analysis is the normality of distributions for dependent and independent variables (Cohen, 2008). Therefore, a further examination of the distributions to determine the extent to which this assumption may or may not have been violated proved useful. I decided to use a combination of graphical and statistical methods to assess normality. With this approach, I felt I did due

Table 4.14

Psychometric Properties of the Major Study Variables for First-Year International Students

Variable	<i>n</i> = 1996	<i>M</i>	<i>SD</i>	α	Range	Skew	SE
Engagement							
Level of Academic Challenge		52.39	13.78	0.65	95.63	0.01	0.31
Active and Collaborative Learning		47.64	16.20	0.76	93.33	0.48	0.36
Enriching Educational Experiences		24.95	15.21	0.69	100.00	1.01	0.34
Student-Faculty Interactions		47.86	19.35	0.78	95.24	0.47	0.43
Success							
Gains in General Education		70.08	20.04	0.83	100.00	-0.43	0.45
Gains in Personal and Social Development		63.57	24.20	0.86	100.00	-0.33	0.54
Gains in Practical Competence		67.41	22.99	0.78	100.00	-0.43	0.51
Gains in Civic and Democratic Development		46.28	23.96	0.68	100.00	0.25	0.54
Satisfaction							
		71.73	20.72	0.76	100.00	-0.06	0.46
Student Perception							
Support for Student Success		57.22	23.2	0.82	100.00	0.02	0.52
Interpersonal Environment		71.51	19.09	0.77	100.00	-0.52	0.43
College Environment							
Academic Expectations		63.29	18.64	0.68	93.33	-0.07	0.42
Spiritual and Social Expectations		32.51	17.35	0.48	67.67	0.07	0.39
Learning and Development Expectations		57.10	22.11	0.76	100.00	0.00	0.49

Note. *M* = mean, *SD* = standard deviation, SE = standard error. Sample size is 1996 without missing data

diligence in my examination.

I computed factor scores using factor loadings generated in the factor analysis, in this case CFA. These factors scores were used as fractional weightings to better represent the contribution of each item to the factor. According to DiStefano, Zhu, Mîndrilă, (2009), this approach theoretically presents a more accurate measure of latent variables. Wainer (1976), however, counter-argued that equal weighting does not distort or perform worse relative to fractional weightings and in some cases are superior. In spite of the supportive arguments for equal weightings, I embraced more the arguments put forward for fractional weightings. Thus from this point, the results will be

Table 4.15

Psychometric Properties of the Major Study Variables for Senior International Students

Variable	<i>n</i> = 2158	<i>M</i>	<i>SD</i>	α	Range	Skew	SE
Engagement							
Level of Academic Challenge		57.57	14.35	0.71	94.16	-0.10	0.29
Active and Collaborative Learning		53.47	16.62	0.68	100.00	0.24	0.34
Enriching Educational Experiences		37.23	21.01	0.70	100.00	0.40	0.43
Student-Faculty Interactions		51.98	19.16	0.75	100.00	0.32	0.39
Integration and Consolidation of Diverse Ideas		66.32	18.11	0.68	100.00	-0.22	0.37
Success							
Gains in General Education		73.40	22.31	0.85	100.00	-0.60	0.46
Gains in Personal and Social Development		65.62	25.70	0.86	100.00	-0.42	0.53
Gains in Practical Competence		72.30	22.06	0.79	100.00	-0.58	0.45
Satisfaction							
		71.73	20.72	0.79	100.00	-0.06	0.46
Student Perception							
Support for Student Success		51.68	23.99	0.77	100.00	0.12	0.49
Interpersonal Environment		71.54	19.06	0.73	100.00	-0.59	0.39
College Environment							
Spiritual and Social Expectations		30.28	17.01	0.44	67.67	0.19	0.35
Learning and Development Expectations		58.69	21.77	0.80	100.00	0.00	0.45

Note. *M* = mean, *SD* = standard deviation, SE = standard error. Sample size is 2158 without missing data

reported using fractional weightings.

I compared the results of three statistical tests of normality on the distributions: Shapiro-Francia (Shapiro & Francia, 1972), Anderson-Darling (Anderson & Darling, 1954), and Cramer-von Mises (Stephen, 1986). In the case of the first-year international students, for each variable except enriching educational experiences, on all three tests, the results were statistically significant at $p < .001$ therefore, I rejected the null hypothesis of normality. I followed up with a graphical examination of the distributions where I studied a histogram, a density plot, and a normality plot of each distribution. The findings from those observations are presented in the next 2 paragraphs

All distributions for first-year international students (see Appendix B) exhibited extreme violation of the normality assumption. The scales measuring student success exhibited the greatest departure from the normality line, particularly at the upper and lower ends of the distribution. It was also evident that some distributions were skewed and some curves were bimodal in shape. In spite of the evidence that the data is not normal, I proceeded based on the rule of thumb that many least square procedures are robust against nonnormality (Van Belle, 2008).

In a similar manner, the distributions for the senior international students exhibited extreme violation of the normality assumptions (see Appendix B). All of the statistical tests were significant at varying levels of acceptance— $p < .05$, $< .01$ and $< .001$ —and resulted in the rejection of the null hypothesis of normality. The visual assessments of the plots and histograms, however, confirmed that the distributions were not normal with mild skewness. Several of the distributions had departures in both the upper and lower ends of the line. Again, I applied the rule of thumb regarding robustness against normality. Overall, both first-year and senior international students' variables appeared ready for the next step of analysis (regression analysis) and did not require data transformation. Additionally, Stoddard (2010) suggestion that most multiple regression assumptions are relevant to a model's residual values and not raw data further endorsed my decision to move forward.

Hierarchical Linear Modeling

Given that the data were now ready to be analyzed using HLM, my first step was to determine if HLM was indeed appropriate for the data, so I conducted a test of

significance on level 2 variance. These results were easily identified in the output from the HLM Software package 6th Edition for the intercept-only model for each dependent variable. In the output, a chi-square statistic is reported which is a test of significance for level 2 variance. The chi-square test results along with the significance level are reported in Tables 4.16 and 4.17 for first-year and senior international students respectively. The results showed that the level 2 variance for all dependent variables was significant at $p < .001$ which suggests that the variation between institutions was significant. In other words, that the effect or difference in the mean of the dependent variables was significant at the institution level (level 2).

The second step was to determine the within and between effects of the variance on each dependent variable. With the output from the intercept-only model, I was able to calculate the intra-class correlation coefficient (ICC) that in turn allowed me to determine the within and between effects of the variance. The ICC for first-year international students dependent variables were: level of academic challenge .046, active and collaborative learning .050, enriching educational experiences .047, and student-faculty interactions .044, cumulative GPA .017, gains in general education .049, gains in personal and social development .043, gains in practical competence .048, and gains in civic and democratic development is .066. For senior international students, the ICC for dependent variables were: level of academic challenge .035, active and collaborative learning .069, enriching educational experiences .096, student-faculty interactions .064, integration and consolidation of diverse ideas .055, cumulative GPA .050, gains in

Table 4.16

Test of Statistical Significance for Level 2 Variations for First-Year International Students

Variable	Est	SD	df	Chi-square	Sig. Level
Level of Academic Challenge	0.039	0.20	125	220.62	***
Active Collaborative Learning	0.041	0.20	125	227.88	***
Enriching Educational Experiences	0.035	0.19	125	224.94	***
Student-Faculty Interactions	0.038	0.20	125	218.89	***
General Education	0.042	0.21	125	224.96	***
Personal and Social Development	0.039	0.20	125	213.79	***
Practical Competence	0.042	0.20	125	222.38	***
Civic and Democratic Development	0.055	0.23	125	270.90	***

Note: Sig. Level is the statistical significance level determined by p -values.
 $* p < .05$, $** p < .01$, $*** p < .001$

Table 4.17

Test of Statistical Significance for Level 2 Variations for Senior International Students

Variable	Est	SD	df	Chi-square	Sig. Level
Level of Academic Challenge	0.033	0.18	125	200.16	***
Active Collaborative Learning	0.064	0.25	125	285.68	***
Enriching Educational Experiences	0.079	0.28	125	344.66	***
Student-Faculty Interactions	0.056	0.24	125	274.33	***
General Education	0.054	0.23	125	247.05	***
Personal and Social Development	0.061	0.25	125	252.65	***
Practical Competence	0.038	0.20	125	226.28	***
Civic and Democratic Development	0.045	0.21	125	252.44	***

Note: Sig. Level is the statistical significance level determined by p -values.
 $* p < .05$, $** p < .01$, $*** p < .001$

general education .053, gains in personal and social development .053, gains in practical competence .046, gains in civic and democratic development .052. Table 4.18 displays the within and between effects for both first-year and senior international students.

Table 4.18

Conditional Effects of Within and Between Institutions

Dependent Variable	First-Year International Students		Senior International Students	
	Within	Between	Within	Between
Engagement				
Level of Academic Challenge	0.95	0.05	0.96	0.04
Active and Collaborative Learning	0.95	0.05	0.93	0.07
Enriching Educational Experiences	0.95	0.05	0.90	0.10
Student-Faculty Interactions	0.96	0.04	0.94	0.06
Integration and Consolidation of Diverse Ideas	—	—	0.94	0.06
Success				
Cumulative GPA	0.98	0.02	0.95	0.05
General Educaiton	0.95	0.05	0.95	0.05
Personal and Social Development	0.96	0.04	0.95	0.05
Practical Competence	0.95	0.05	0.95	0.05
Civic and Democratic Development	0.93	0.07	0.95	0.05

Note. Results are from HLM outputs for null models.

The proportion of variance between institutions for first-year international students ranged from 2% to 7% and for senior international students, ranged from 4% to 10%. These ICC values, in some cases, were somewhat small and might have been considered insignificant by some researchers. This idea is based on the common practice among some of these researchers to observe .05 (same as 5%) as an acceptable level for ICC because less is felt to be too small and close to zero. A review of the literature did not confirm or establish this practice as a rule of thumb in the community of statisticians. I noted, however, that .05 was used in the literature only in reference to alpha. Therefore, it is plausible to conclude that some researchers have confused the use of .05 as a rule of thumb for ICC when in fact the reference has been for alpha. The next section presents

the actual HLM model outputs for the proposed conceptual model and the research questions.

Proposed Conceptual Model Testing

For the proposed model, the main propositions were tested individually to determine the extent to which each held true. The results are displayed in Table 4.19 and 4.20. The order of proposition testing was as follows: (a) student characteristics predict engagement and success; (b) student characteristics, student perception, satisfaction, and college environment predict engagement and success; (c) student characteristics, student perception, and college environment predict satisfaction; (d) satisfaction has a reciprocal relationship with engagement and success; (e) student engagement and success also have a reciprocal relationship. Following are the results of those tests.

Student Characteristics

The first test was to assess the extent to which student characteristics predict engagement. In Table 4.19, the results for student characteristics prediction of engagement have been denoted by the use of the symbol “†” for all significant predictors. For engagement measured by the level of academic challenge, I found that for first-year international students: selection of major, father’s level of education, and enrollment status were predictors while for senior international students: age, enrollment status, and race/ethnicity were the only student characteristics that were predictors. Predictors of active and collaborative learning for first-year international students were selection of major, mother’s level of education, and enrollment status while for seniors, age, major, father’s level of education, enrollment status, and race/ethnicity. Enriching educational

Table 4.19

Results of The Tests of Propositions For First-Year and Senior International Students' Engagement

	Level of Academic Challenge		Active and Collaborative Learning		Enriching Educational Experiences		Student-Faculty Interactions		Integration and Consolidation of Diverse Ideas	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Level 1 (Student)										
Student Characteristics:										
Age	0.03	-0.08 †	0.06	-0.08 *†	-0.02	-0.19 ***†	0.04	-0.09 *†	-	-0.05
Transfer Status	-	0.02	-	-0.02	-	-0.18 ***†	-	-0.06	-	0.01
Major:	-0.30 ***†		-0.20 *†		-0.40 ***†		-0.17		-	
STEM	-	0.14 *	-	-0.05 †	-	0.14 **	-	-0.02 †	-	-0.15 ***†
Business and Professional	-	0.08	-	0.11 *†	-	0.03	-	-0.02	-	0.07
Social Science and Ed.	-	0.03	-	-0.05	-	0.07	-	-0.02	-	0.00
Father's Level of Education:										
Undergraduate	0.05	0.06	0.02	0.05	-0.01	0.01	-0.01	0.05	-	0.03
Graduate	0.13 *†	0.11	0.02	0.14 *†	0.01	0.16 ***†	-0.01	0.16 ***†	-	0.15 *†
Mother's Level of Education:										
Undergraduate	0.03	-0.04	0.11 *	-0.03	0.11 *	0.02	0.10 *	-0.01	-	-0.07
Graduate	0.05	-0.01	0.17 ***†	-0.02	0.17 ***†	0.05	0.16 ***†	0.02	-	-0.04
Residence	0.03	0.07	-0.03	0.02	-0.02	-0.14 ***†	-0.03	0.00	-	0.06
Enrollment Status	0.17 *†	0.14 ***†	0.18 *†	0.18 ***†	0.20 *†	0.25 ***†	0.16 *†	0.19 ***†	-	0.14 *†
Gender	-0.05	0.06	-0.06	0.01	-0.07	*† 0.03	-0.06	-0.05	-	0.08 *
Race/Ethnicity:										
Hispanic	0.10	0.20 ***†	0.20 ***	0.30 ***†	0.22 ***†	0.21 ***†	0.22 ***	0.24 ***†	-	0.28 ***
Black	0.07	0.11 †	0.21 **	0.21 ***†	0.24 ***	0.13 *†	0.24 ***	0.17 ***†	-	0.16 *†
Asian	0.09 *	0.04	0.18 ***	0.03	0.22 ***	0.17 ***†	0.22 ***	0.09 *	-	0.01

(continue)

Results of The Tests of Propositions For First-Year and Senior International Students' Engagement (continued)

	Level of Academic Challenge			Active and Collaborative Learning			Enriching Educational Experiences			Student-Faculty Interactions			Integration and Consolidation of Diverse Ideas		
	Academic Challenge			Collaborative Learning			Educational Experiences			Interactions			Diverse Ideas		
	FY	SR	SR	FY	SR	SR	FY	SR	SR	FY	SR	SR	FY	SR	SR
<u>Student Perception:</u>															
Support for Success	0.26***	0.25***	0.26***	0.33***	0.32***	0.32***	0.27***	0.28***	0.28***	0.33***	0.30***	0.30***	-	-	0.31***
Interpersonal Environment	0.13***	0.11**	0.11**	0.11***	0.16***	0.16***	0.00	0.13***	0.13***	0.12***	0.22***	0.22***	-	-	0.12***
Satisfaction	0.11***	0.03	0.03	0.10***	0.00	0.00	0.06	* -0.04	* -0.04	0.10***	-0.01	-0.01	-	-	0.02
<u>Level 2 (Institution)</u>															
<u>College Environment:</u>															
<u>Institutional Types</u>															
High Research	-0.08	-0.01	-0.01	-0.05	0.06	0.06	-0.01	0.06	0.06	-0.03	0.14**	0.14**	-	-	0.01
Doctoral Universities	-0.18	-0.09	-0.09	-0.04	0.11	0.11	-0.10	0.12	0.12	-0.02	0.15*	0.15*	-	-	0.03
Master's Large Programs	-0.17**	-0.05	-0.05	-0.03	0.06	0.06	-0.10	0.05	0.05	0.02	0.11*	0.11*	-	-	0.01
Master's Medium Prog.	-0.27**	-0.10	-0.10	0.00	0.03	0.03	-0.15	-0.10	-0.10	0.01	0.03	0.03	-	-	-0.08
Master's Small Programs	-0.16	-0.17	-0.17	0.04	0.00	0.00	-0.03	0.12	0.12	0.08	0.19	0.19	-	-	-0.06
Arts and Science	-0.13	-0.19	-0.19	* 0.00	-0.17	-0.17	-0.02	-0.07	-0.07	0.01	0.08	0.08	-	-	-0.16
Diverse Fields	-0.09	-0.25	-0.25	-0.02	0.01	0.01	0.00	0.13	0.13	-0.02	0.17	0.17	-	-	-0.06
Institutional Control	0.08	0.05	0.05	0.01	0.04	0.04	0.02	-0.06	-0.06	-0.01	-0.02	-0.02	-	-	0.04
Academic Expectations	0.35***	-	-	0.38***	-	-	0.04***	-	-	0.33***	-	-	-	-	-
<u>Spiritual and Social</u>															
Expectations	-0.40**	-0.59**	-0.59**	0.34**	-0.51**	-0.51**	-0.20***	0.18***	0.18***	-0.24*	0.39*	0.39*	-	-	-1.15***
Learning and Development Expectations	0.41***	0.84***	0.84***	0.39**	0.75***	0.75***	0.44**	0.21**	0.21**	0.31*	0.64***	0.64***	-	-	1.45***

Notes. † represent predictors of engagement when student characteristics were the only variables in the model.

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

experiences for first-year international students, predictors were: selection of major, mother's level of education, enrollment status, gender, and race/ethnicity while for seniors: age, father's level of education, transfer status, living arrangement, enrollment status, and race/ethnicity. Student-faculty interactions for first-year international students had the following predictors: mother's level of education, enrollment status, and race/ethnicity while seniors had the following predictors: age, major, father's level of education, enrollment status, and race/ethnicity. Integration and consolidation of diverse ideas for senior international students had the following predictors: major, father's level of education, enrollment status, and race/ethnicity.

All results related to the prediction of success for this section are displayed in Table 4.20 and the significant predictors are denoted by the symbol “†”. For success measured by GPA, the following five student characteristics predictors were significant for first-years: age, selection of major, father's level of education, living arrangement, gender, and race/ethnicity while for seniors, the predictors were: major, father's level of education, transfer status, enrollment status, and gender. Success measured by gains in general education for first-years had race/ethnicity as the only predictor while for seniors there were major, mother's level of education, and race/ethnicity. Gains in personal and social development had race/ethnicity as the only student characteristic predictor for first-years but for seniors there were major, mother's level of education, living arrangement and race/ethnicity. Age and race/ethnicity were the only 2 predictors of gains in practical

Table 4.20

Results of The Tests of Propositions For First-Year and Senior International Students' Success

	Grade Point Average (GPA)		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Level 1 (Student)										
<u>Student Characteristics:</u>										
Age	0.26 ***†	-0.03	0.14 *	-0.01	0.13	0.00	0.14 *†	-0.01	0.12	0.00
Transfer Status	-	0.06 *†	-	-0.02	-	-0.08	-	-0.03	-	-0.07
Major	-0.22 **†	-	-0.09	-	-0.02	-	-0.10	-	0.00	-
STEM	-	-0.03	-	0.06	-	-0.07	-	0.14 **	-	-0.08 †
Business and Professional	-	-0.07 †	-	0.13 ***†	-	0.11 **†	-	0.17 ***†	-	0.08 *†
Social Science and Educa	-	-0.01	-	0.11 *	-	0.13 *†	-	0.05	-	0.11 *
Father's Level of Education										
Undergraduate	0.06	-0.01	0.00	0.02	-0.04	0.03	0.01	0.02	-0.04	0.03
Graduate	0.10 *†	0.13 †	0.07	-0.06	0.01	0.05	0.08	-0.01	-0.01	0.05
Mother's Level of Education										
Undergraduate	-0.02	0.03	-0.03	-0.06	0.03	-0.06	-0.03	-0.06	0.04	-0.06
Graduate	-0.03	0.07	-0.04	-0.09 †	-0.02	0.13 *†	-0.06	-0.07	0.00	-0.13 *†
Residence	-0.13 ***†	-0.04	0.04	0.04	0.02	0.02 †	0.03	0.09	0.03	-0.01 †
Enrollment Status	0.01	0.11 **†	0.03	0.04	0.11	0.01	0.04	0.05 †	0.10	-0.02
Gender	0.09 **†	0.13 ***†	0.02	0.04	0.01	0.00	0.01	0.01	0.00	-0.02
Race/Ethnicity										
Hispanic	-0.16 ***†	-0.16 ***†	0.11 **†	0.25 ***†	0.12 *†	0.29 ***†	0.12 ***†	0.16 ***†	0.12 *†	0.24 ***†
Black	-0.27 ***†	-0.25 ***†	0.13 *†	0.22 ***†	0.08 †	0.15 *†	0.14 *†	0.21 ***†	0.08 †	0.08 †
Asian	0.04	-0.03	0.11 **	0.07	0.20 ***	0.22 ***†	0.16 ***	0.09 *	0.21 ***†	0.19 ***†

(continue)

Results of The Tests of Propositions For First-Year and Senior International Students' Success (continued)

	Grade Point Average (GPA)		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
<u>Student Perception:</u>										
Support for Success	-0.01	-0.09 ***	0.42 ***	0.39 ***	0.46 ***	0.52 ***	0.44 ***	0.36 ***	0.46 ***	0.46 ***
Interpersonal Environment	0.06	** 0.11 ***	0.11 ***	0.06 *	0.06 *	0.03	0.11 ***	0.07 *	0.02	0.02
Satisfaction	0.07	** 0.08 **	0.27 ***	0.29 ***	0.24 ***	0.22 ***	0.26 ***	0.25 ***	0.21 ***	0.15 ***
Level 2 (Institution)										
<u>College Environment:</u>										
<u>Institutional Types</u>										
High Research	0.05	-0.03	-0.01	0.01	0.07	0.10	-0.05	-0.01	0.06	0.12 *
Doctoral Universities	0.11	0.05	-0.06	-0.27	0.01	0.04	-0.09	-0.07	0.04	0.05
Master's Large Programs	0.05	0.05	-0.09	0.01	-0.01	0.10	-0.12 *	0.00	-0.03	0.09
Master's Medium Prog.	0.02	-0.01	-0.04	0.03	0.07	0.01	-0.09	0.07	0.07	0.00
Master's Small Programs	0.18	0.02	-0.23 *	-0.22 *	-0.19	-0.09	-0.28 **	-0.26 **	-0.19	-0.01
Arts and Science	0.12	-0.03	-0.09	0.00	-0.06	0.05	-0.18 **	-0.10	-0.09	0.01
Diverse Fields	0.15	-0.03	-0.16	-0.17	0.04	-0.02	-0.19 *	-0.18	-0.02	-0.01
Institutional Control	-0.02	0.00	0.03	0.03	0.00	0.00	0.03	0.01	-0.02	0.01
Academic Expectations	-0.04	-	0.42 ***	-	0.25 **	-	0.41 ***	-	0.24 **	-
<u>Spiritual and Social</u>										
Expectations	-0.06	-0.33	** -0.20	* -0.33 *	-0.22 *	-0.03	-0.14	-0.22	0.06	0.17
Learning and Development Expectations	0.07	0.38	** 0.09	0.55 ***	0.28 *	0.28 *	0.05	0.34 *	0.15	0.07

Notes. † represent predictors of success when student characteristics were the only variables in the model.

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

competence for first-years while major, enrollment status, and race/ethnicity were predictors for seniors. For gains in civic and democratic development, race/ethnicity was the only predictor for first-years while for senior, major, mother's level of education, living arrangement, and race/ethnicity predicted success.

Satisfaction

The second tests of propositions stated that student characteristics, student perception, and college environment positively predict student satisfaction. Following is the presentation of those results. The proposition that student characteristics, student perception and college environment predict student satisfaction was tested and held true for first-year and senior international students. For first-years: race/ethnicity was the only student characteristic that predicted satisfaction. Student perception of support for success and interpersonal environment, and the type of institution as well as the institution's spiritual and social, learning and development expectations were all predictors of student satisfaction. For seniors: age, transfer status, and race/ethnicity were the student characteristics, student perception of support for success and interpersonal environment along with institutional type predicted satisfaction.

For this study, engagement was not a predictor of satisfaction, however satisfaction predicted all measures of engagement for first-years only. Results are displayed in Table 4.19. In the cases of both first-years and seniors, satisfaction was a predictor of success. GPA and gains in general education, however, were the only two predictors of satisfaction. These findings serve as evidence that there is a reciprocal relationship between satisfaction and success, more specifically for GPA and gains in

general education.

The third set of propositions examined the relationship among student characteristics, student perception, and college environment in predicting engagement and success. Following are the presentation of those results that are found in Table 4.20. First, I discussed the results of the test of propositions related to engagement followed by the discussion of results for success.

Engagement

The proposition that student characteristics, student perception, and college environment predict level of academic challenge was tested and held true for first-year and senior international students (see Table 4.19). For first-years: selection of major, father's level of education, enrollment status, and race/ethnicity were student characteristic predictors. Other predictors were student perception of support for success, interpersonal environment, and satisfaction along with institutional types and the institution's academic, spiritual and social, and learning and development expectations. For seniors: major, enrollment status, and race/ethnicity were student characteristic predictors. Student perception of support for success and interpersonal environment also predicted level of academic challenge. The college environment predictors were: institutional types, the institution's spiritual and social, and learning and development expectations.

The proposition that student background characteristics along with student perception and college environment predict active and collaborative learning was tested and held true for both first-year and senior international students (see Table 4.19). In the

case of first-years: selection of major, mother's level of education, enrollment status and race/ethnicity were the student characteristics while student perception of support for success, the interpersonal environment, and satisfaction as well as college environment, specifically, the institution's academic, spiritual and social, and learning and development expectations were also predictors. For seniors: age, major, father's level of education, enrollment status, and race/ethnicity were student characteristics. Student perception of support for success and the interpersonal environment and college environment, specifically, the institution's spiritual and social expectations, and learning and development expectations were the other key predictors.

The proposition that student characteristics, student perception, and college environment predict enriching educational experience was tested and held true for first-year but not senior international students (see Table 4.19). Again, for first-years: selection of major, mothers' level of education, enrollment status, gender, and race/ethnicity were all student characteristic predictors. Student perception of support for success as well as satisfaction, and the college environment, specifically, the institution's academic, spiritual and social, and learning and development expectations all predicted enriching educational experiences. For seniors: age, major, father's level of education, transfer status, living arrangement, enrollment status, and race/ethnicity were student characteristic predictors. Student perception of support for success and interpersonal environment were the only other predictors of enriching educational experiences. With no college environment predictor in the model, the proposition failed to be true for seniors.

The proposition that student characteristics, student perception, and college environment predict student–faculty interactions was tested and held true for both first-year and senior international students (see Table 4.19). In the case of first-years: mother’s level of education, enrollment status, and race/ethnicity were student characteristic predictors. Student perception of support for success, interpersonal environment as well as satisfaction along with the institution’s expectations for academic, social and spiritual, and learning and development were predictors of student–faculty interactions. For seniors: age, father’s level of education, enrollment status, and race/ethnicity were the student characteristics. Student perception of support for success and the interpersonal environment along with institutional types and the institution’s spiritual and social, and learning and development expectations were all predictors.

The proposition that student characteristics, student perception, and college environment predict integration and consolidation of diverse ideas for seniors was tested and held true (see Table 4.19). The student characteristic predictors were major, father’s level of education, enrollment status, gender, and race/ethnicity. Student perception of support for success and the interpersonal environment along with the institution’s spiritual and social, and learning and development expectations were all predictors.

Success

In a similar manner, I tested the propositions for success for first-year and senior international students. The first proposition was that student characteristics, student perception, and college environment predict GPA (see Table 4.20). For first-year international students, this proposition did not hold true. The predictors, however, were

age, selection of major, father's level of education, living arrangement, gender and race/ethnicity as student characteristics, with student perception of the interpersonal environment and satisfaction. No college environment variable was included. The proposition held true for senior international students with father's level of education, transfer status, enrollment status, gender, and race/ethnicity as student characteristics. Student perception of support for success, the interpersonal environment, and satisfaction as well as the institution's spiritual and social, and learning and development expectations were all predictors.

The proposition that student characteristics, student perception, and college environment predict gains in general education was tested and found to be true for first-year and senior international students (see Table 4.20 for results). For first-years: age and race/ethnicity were the student characteristics predictors. Student perception of support for success and interpersonal environment, satisfaction; institutional type, and academic expectations were the other predictors. For senior international students: major and race/ethnicity were the only student characteristic predictors. Student perception of support for success, interpersonal environment, and satisfaction, along with institutional types, and the institution's spiritual and social and learning and development expectations were the other predictors.

The proposition that student characteristics, student perception, and college environment predict gains in personal and social development was tested and held true for both first-year and senior international students (see Table 4.20). For first-years: race/ethnicity was the only student characteristic that predicted gains. Student perception

of support for success, the interpersonal environment, and satisfaction as well as the institution's academic, spiritual and social, and learning and development expectations were the other predictors. For seniors: major, mother's level of education, and race/ethnicity were the student characteristics predictors. Student perception of support for success and satisfaction along with the institution's academic, spiritual and social, and learning and development expectations were all predictors.

The proposition that student characteristics, student perception, and college environment predict gains in practical competence was tested and held true for both first-years and seniors (see Table 4.20). In the case of first-years: age and race/ethnicity were the only student characteristic predictors. Student perception of support for success, interpersonal environment and satisfaction along with institutional type and the institution's academic expectations were also predictors. For seniors: major and race/ethnicity were student characteristics predictors while student perception of support for success, the interpersonal environment, and satisfaction along with institutional type and the institution's learning and development expectations were also predictors.

The proposition that student characteristics, student perception, and college environment predict gains in civic and democratic development was tested and held true for first-years and seniors (see Table 4.20). For first-years: race/ethnicity was the only student characteristic predictor. Student perception of support for success and satisfaction along with the institution's academic expectations were the other predictors. For seniors: major, mother's level of education, and race/ethnicity were student

characteristics predictors. Student perception of support for success and satisfaction along with institutional type were the only other predictors.

Reciprocal Relationship Between Engagement and Success

The final part of the conceptual model suggests that engagement and success share a reciprocal relationship. This proposition was tested and held true for both first-year and senior international students (see Table 4.21). For first-years: level of academic challenge positively predicted GPA, gains in general education, personal and social development, practical competence, and civic and democratic development. Active and collaborative learning did not predict success for first-year international students. Enriching educational experiences positively predicted gains in personal and social development, and civic and democratic development. Finally, student–faculty interactions positively predicted GPA and gains in civic and democratic development.

For seniors, like first-years, level of academic challenge positively predicted GPA, gains in general education, personal and social development, practical competence, civic and democratic development. Active and collaborative learning positively predicted gains in practical competence but exhibited a negative relationship with civic and democratic development. Enriching educational experiences predicted GPA and gains in civic and democratic development. Student–faculty interactions exhibited a negative relationship with gains in general education and gains in practical competence. Integration and consolidation of diverse ideas predicted gains in personal and social development, practical competence, and civic and democratic development.

Table 4.21
Engagement Predicts Success for First-Year and Senior International Students

Parameters	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Engagement:										
Level of Academic Challenge	0.09 ***	0.04 *	0.26 ***	0.18 ***	0.19 ***	0.12 ***	0.23 ***	0.17 ***	0.10 **	0.07 **
Active and Collaborative Learning	0.13	0.04	0.05	0.07	0.01	-0.12	0.08	0.13 **	0.00	-0.16 **
Enriching Educational Experiences	-0.01	0.07 **	-0.01	-0.04	0.07 *	0.05	0.00	-0.05	0.10 ***	0.10 ***
Student-Faculty Interactions	-0.15 **	-0.01	0.05	-0.12 **	0.12	-0.03	0.05	-0.12 ***	0.14 *	0.01
Integration and Consolidation of Diverse Ideas		0.00		0.20		0.29 ***		0.12 **		0.24 ***

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

Table 4.21.1

Success Predicts Engagement for First-Year and Senior International Students

Parameters	Level of Academic Challenge		Active and Collaborative Learning		Enriching Educational Experiences		Students-Faculty Interactions		Integration and Consolidation of Diverse Ideas	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Success:										
Grade Point Average	0.13 ***	0.17 ***	0.07	0.18 ***	0.04	0.19 ***	0.05	0.17 ***	-	0.17 ***
General Education	0.21	0.28 ***	-0.10 ***	0.20 ***	-0.17 **	0.07	-0.10 **	0.08	-	0.32 **
Personal and social Development	0.29 ***	-0.25 **	0.12	0.34 ***	0.01	0.68 ***	0.11	-0.47 ***	-	-0.16
Practical Competence	0.08 *	0.16 **	0.30 ***	0.17 **	0.23 **	0.17 **	0.27 ***	0.18 **	-	0.06
Civic and Democratic Development	-0.16 **	0.32 **	0.07	0.43 ***	0.22 ***	0.81 ***	0.09 *	0.58 ***	-	0.29 **

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

Student success predicted engagement for both first-year and senior international students. See results in Table 4.21.1. For first-years, GPA predicted level of academic challenge. Gains in general education predicted active and collaborative learning, enriching educational experiences and student–faculty interactions. Gains in personal and social development predicted level of academic challenge. Practical competence predicted level of academic challenge, active and collaborative learning, enriching educational experiences, and student–faculty interactions. Gains in civic and democratic development predicted level of academic challenge, enriching educational experiences and student–faculty interactions.

For seniors, GPA predicted level of academic challenge, active and collaborative learning, enriching educational experiences, student–faculty interactions, and integration and consolidation of diverse ideas. Gains in general education predicted level of academic challenge, active and collaborative learning, and integration and consolidation of diverse ideas. Gains in personal and social development positively predicted level of academic challenge, enriching educational experiences, student–faculty interactions, but exhibited a negative relationship with active and collaborative learning. Gains in practical competence predicted level of academic challenge, active and collaborative learning, enriching educational experiences, and student–faculty interactions. Gains in civic and democratic development predicted level of academic challenge, active and collaborative learning, enriching educational experiences, student–faculty interactions, and integration and consolidation of diverse ideas.

Research Question 1**How does the engagement of international students in different types of institutions vary based on race/ethnicity and gender?**

This study found differences in level of academic challenge within and between institutions based on race/ethnicity and gender. Results from the HLM analysis displayed in Table 4.22, revealed that first-year Black international students in high research universities and baccalaureate colleges in diverse fields were more engaged than White international students in those types of institutions. Additionally, senior Hispanic international students in very high research universities and senior Asian international students in doctoral research universities were more engaged than White international students in those types of institutions. For gendered differences, I found that senior female international students were more engaged than senior male students at master's colleges and universities with larger programs.

For active and collaborative learning, HLM analysis revealed that first-year Asian international students at baccalaureate colleges in diverse fields were more engaged than White students in the same type of institutions. Senior Asian international students in very high research universities were also more engaged than White students in the same type of institutions. For gendered analysis, I found that senior female students in master's colleges and universities with larger programs were more engaged than male students in the same type of institutions.

HLM analysis revealed that for enriching educational experiences, first-year Hispanic, Black, and Asian international students in very high research universities were

Table 4.22
Predicting Engagement By Race/Ethnicity and Gender Across Institutional Types for First-Year and Senior International Students

	Level of Academic Challenge		Active and Collaborative Learning		Enriching Educational Experiences		Student-Faculty Interactions		Integration and Consolidation of Diverse Ideas	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Very High Research University										
Female	-0.05	0.07	-0.10	0.07	0.07	0.06	-0.12	-0.04	-	0.06
Hispanic and White	0.03	0.34 *	0.21	0.42	0.52 ***	0.30 **	0.21 *	0.37 **	-	0.46 **
Black and White	0.01	0.34	0.36	0.25	0.62 **	0.12	0.44 *	0.06	-	0.37
Asian and White	0.09	0.08	0.13	0.07 **	0.24 *	0.26 **	0.15	0.12	-	0.04
High Research University										
Female	-0.03	0.08	-0.12	-0.01	-0.30 **	-0.18	-0.11	-0.02	-	0.04
Hispanic and White	0.20	-0.16	0.11	-0.15	-0.13	-0.17	0.07	-0.15	-	-0.24
Black and White	0.47 *	-0.19	0.04	-0.04	-0.15	-0.07	-0.06	0.11	-	-0.26
Asian and White	0.25	-0.06	0.19	-0.02	0.13	-0.17	0.17	-0.01	-	-0.05
Doctoral Research University										
Female	0.21	0.10	0.18	0.04	-0.03	0.07	0.14	0.09	-	0.01
Hispanic and White	-0.18	0.11	-0.21	0.21	-0.34	-0.21	-0.25	-0.06	-	0.03
Black and White	0.19	0.08	-0.33	0.19	-0.57	0.06	-0.32	0.00	-	0.00
Asian and White	0.11	0.37 *	-0.17	0.34	-0.30	0.05	-0.14	0.12	-	0.27
Master's Colleges and Universities - Larger Program										
Female	0.05	0.23 *	0.05	0.20 *	-0.12	0.06	0.02	0.14	-	0.26 *
Hispanic and White	-0.10	-0.07	-0.19	0.04	-0.39 *	-0.07	-0.15	-0.03	-	-0.10
Black and White	0.01	-0.22	-0.17	0.04	-0.30	0.03	-0.25	0.22	-	-0.19
Asian and White	-0.08	-0.05	-0.03	0.03	0.02	-0.18	-0.03	0.01	-	-0.04
Master's Colleges and Universities - Medium Program										
Female	0.01	-0.23	0.04	-0.19	-0.17	-0.32	0.03	-0.22	-	-0.25
Hispanic and White	0.12	0.16	-0.13	0.38	-0.38	0.00	-0.15	-0.02	-	0.30
Black and White	0.19	-0.03	-0.11	-0.10	-0.28	-0.27	-0.21	-0.07	-	-0.15
Asian and White	0.26	0.29	0.17	0.00	0.12	-0.35	0.17	-0.31	-	0.07

(continue)

Predicting Engagement By Race/Ethnicity and Gender Across Institutional Types for First-Year and Senior International Students
(continue)

	Level of Academic Challenge		Active and Collaborative Learning		Enriching Educational Experiences		Student-Faculty Interactions		Integration and Consolidation of Diverse Ideas	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Master's Colleges and Universities - Smaller Program										
Female	0.30	-0.43	0.28	-0.16	0.60 *	-0.18	0.26	-0.16	-	-0.28
Hispanic and White	0.53	-0.15	0.09	-0.12	-0.13	0.06	0.14	-0.10	-	-0.09
Black and White	0.40	0.32	0.17	0.48	-0.03	0.12	0.25	0.37	-	0.19
Asian and White	-0.31	-0.06	-0.30	-0.36	-0.78 *	-0.20	-0.10	-0.22	-	-0.28
Baccalaureate Colleges - Arts and Sciences										
Female	0.08	0.12	0.13	-0.02	0.07	-0.10	0.08	-0.07	-	0.03
Hispanic and White	0.00	-0.01	0.17	-0.12	-0.29	-0.07	0.87	-0.20	-	-0.22
Black and White	-0.01	0.06	-0.28	0.22	-0.43	0.36	-0.41	0.26	-	-0.12
Asian and White	-0.15	0.04	-0.05	-0.02	-0.06	-0.19	-0.06	-0.14	-	0.01
Baccalaureate Colleges - Diverse Fields										
Female	-0.20	0.00	-0.15	0.07	-0.20	0.28	-0.18	0.06	-	-0.72
Hispanic and White	0.01	-0.43	0.08	-0.39	-0.05	-0.20	0.00	-0.24	-	-0.49
Black and White	0.91 *	-0.24	0.25	0.39	-0.04	0.27	0.08	0.69	-	0.04
Asian and White	0.17	0.26	0.67 *	0.14	0.73 *	0.23	0.55	0.24	-	-0.12
Race/Ethnicity: Gender										
Hispanic Female	0.11	-0.13	0.07	-0.19	0.01	-0.01	0.12	-0.10	-	-0.14
Black Female	0.22	-0.23	-0.10	-0.21	-0.25	-0.04	-0.07	-0.06	-	-0.17
Asian Female	0.03	-0.09	0.03	-0.11	-0.04	-0.04	0.08	-0.03	-	-0.04

Notes. FY represents first year international students; SR represents senior international students.

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

all more engaged than White international student in that type of institutions. Further, first-year Hispanic international students in master's colleges and universities with larger programs, and Asian international students in master' colleges and universities with smaller programs were less engaged than White international students at the same type of institutions. Additionally, Asian international students in baccalaureate colleges in diverse fields were more engaged than White international students in that type of institutions. Senior Hispanic and Asian international students in very high research universities were more engaged than White international students at the same type of institutions. Again, for gendered analysis, first-year female international students in high research universities were more engaged than male international students at the same type of institutions.

Student–faculty interactions results revealed that first-year Hispanic and Black international students in very high research universities were more engaged than White international students in that type of institution. Additionally, senior Hispanic international students in very high research universities were more engaged than White international students at that institution. No gendered difference was observed for student–faculty interactions. The final HLM analysis results were for integration and consolidation of diverse ideas which only applied to seniors. The analysis revealed that senior Hispanic international students in very high research universities were more engaged than White international students at that type of institution. No gendered relationship was observed for integration and consolidation of diverse ideas.

Research Question 2

To what extent is there a relationship between engagement and success among international students across racial or ethnic groups?

Again, the analysis was done from engagement to success and from success to engagement. From the HLM analysis results in Table 4.23, it was observed that only 2 relationships between engagement measures and success measures for first-year international students were mediated by race/ethnicity. The first relationship was between the level of academic challenge and gains in practical competence. I found that Black international students' level of academic challenge predicted higher gains in practical competence than did White international students'. The second relationship was between enriching educational experiences and GPA. I found that Hispanic international students' engagement in enriching educational experiences lowered GPA more than it did for White international students.

For senior international students, only 3 relationships between engagement and success were mediated by race/ethnicity. The first relationship was between the level of academic challenge and gains in personal and social development. I found that Black international students' level of academic challenge predicted higher gains in personal and social development than did White international students'. The second relationship was between the level of academic challenge and gains in civic and democratic development. Black international students' level of engagement predicted higher gains in civic and democratic development than did White international students'. Finally, the third relationship was between enriching educational experiences and gains in general

Table 4.23
Relationship Between Engagement And Success By The Race/Ethnicity of First-Year and Senior International Students

	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Engagement:										
Level of Academic Challenge										
Hispanic and White	0.10	-0.06	-0.09	0.03	-0.03	0.07	-0.13	0.03	-0.01	0.06
Black and White	0.17	0.00	-0.17	0.04	-0.17	0.17 *	-0.18 *	0.05	-0.11	0.17 *
Asian and White	0.06	0.01	-0.01	0.04	0.03	0.04	-0.01	0.03	0.08	0.04
Active and Collaborative Learning										
Hispanic and White	-0.10	0.19	0.04	0.21	0.07	0.05	0.00	0.13	0.12	-0.07
Black and White	0.03	-0.04	0.40	0.22	0.42	-0.01	0.32	0.16	0.28	-0.11
Asian and White	-0.23	0.07	0.10	-0.03	0.01	0.01	0.02	-0.03	-0.10	-0.03
Enriching Educational Experiences										
Hispanic and White	-0.14 *	-0.05	-0.07	-0.20 *	0.01	-0.11	-0.01	-0.09	0.02	-0.08
Black and White	-0.15	0.02	-0.13	-0.14	-0.07	-0.12	-0.07	-0.12	-0.02	-0.05
Asian and White	-0.09	-0.07	-0.08	-0.08	0.01	0.01	-0.04	-0.03	0.03	0.06
Student-Faculty Interactions										
Hispanic and White	0.01	-0.10	0.10	0.01	-0.04	0.03	0.12	0.00	-0.11	0.07
Black and White	-0.01	0.01	-0.16	-0.01	-0.24	0.11	-0.11	-0.01	-0.17	0.10
Asian and White	0.01	0.08	-0.05	-0.03	-0.07	-0.08	-0.01	-0.11	0.01	-0.05
Integration and Consolidation of Diverse Ideas										
Hispanic and White	-	0.01	-	-0.15	-	0.00	-	-0.11	-	0.09
Black and White	-	0.12	-	-0.27	-	-0.30	-	-0.19	-	-0.16
Asian and White	-	-0.05	-	0.02	-	-0.04	-	0.05	-	-0.05

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

education. Hispanic international students' engagement in enriching educational experiences predicted higher gains in general education than did White international students'.

The flip side of the relationship was for success to predict engagement. HLM analysis resulted in the following findings presented in Table 4.23.1. The relationships between GPA and active and collaborative learning, GPA and enriching educational experiences, and GPA and student–faculty interactions resulted in lower scores for first-year Hispanic students when compared to White international students. When examining the relationship between gains in general education and enriching educational experiences, I found that first-year Hispanic, Black, and Asian international students had lower scores compared to White international students. For gains in general education and student–faculty interactions, I also found lower scores for Black international students when compared to White international students. Gains in practical competence and enriching educational experiences exhibited lower scores for Hispanic and Black international students as well when compared to White international students. Lower scores were also observed for first-year Black international students for the relationship between gains in practical competence and student–faculty interactions. The only senior students' relationship with statistical difference was between gains in civic and democratic development and enriching educational experiences where Asian international students had higher scores than White international students.

Table 4.23.1

Relationship Between Success And Engagement By The Race/Ethnicity of First-Year and Senior International Students

	Level of Academic Challenge		Active and Collaborative Learning		Enriching Educational Experiences		Student-Faculty Interactions		Integration and Consolidation of Diverse Ideas	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Success										
Grade Point Average										
Hispanic and White	-0.07	-0.02	-0.16 *	0.10	-0.22 **	0.03	-0.20 *	0.06	-	0.10
Black and White	0.08	0.06	-0.06	0.14	-0.15	0.04	-0.07	0.11	-	0.18
Asian and White	-0.01	0.02	-0.06	0.07	-0.11	0.04	-0.03	0.10	-	0.04
General Education										
Hispanic and White	0.23	-0.11	0.05	-0.07	-0.50 *	-0.27	0.02	-0.07	-	-0.04
Black and White	-0.36	-0.19	-0.56	-0.04	-0.92 **	0.23 *	-0.70 *	0.00	-	-0.08
Asian and White	-0.14	0.08	-0.13	0.05	-0.42 *	0.03	-0.16	0.21	-	0.06
Personal and Social Development										
Hispanic and White	-0.02	0.11	0.00	0.01	0.12	0.11	0.01	-0.01	-	-0.21
Black and White	-0.07	-0.32	0.03	-0.09	-0.11	-0.27	-0.07	0.02	-	-0.37
Asian and White	-0.07	-0.17	-0.07	0.02	-0.02	-0.38	-0.11	-0.15	-	0.02
Practical Competence										
Hispanic and White	-0.30	0.08	0.05	0.12	0.50 *	0.20	0.13	0.11	-	0.10
Black and White	0.28	0.23	0.61	0.06	0.92 **	-0.20	0.80 *	-0.01	-	0.15
Asian and White	0.13	-0.02	0.16	-0.04	0.40	0.01	0.21	-0.18	-	-0.01
Civic and Democratic Development										
Hispanic and White	0.07	-0.05	0.00	0.06	-0.03	0.01	-0.04	0.07	-	0.30
Black and White	0.18	0.42	0.09	0.04	0.21	0.17	0.17	-0.08	-	0.33
Asian and White	0.23	0.20	0.18	0.02	0.22	0.49 *	0.20	0.17	-	-0.01

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

Research Question 3

To what extent do institutional factors have a differential relationship with student success for each racial or ethnic group of international students?

The results from the HLM analysis presented in Table 4.24 revealed that institutional factors have differential relationships with student success based on race/ethnicity. Senior Black and Hispanic international students in private universities and colleges had higher scores for gains in personal and social development than White international students. Similarly, senior Hispanic students at private universities and colleges had higher scores for gains in civic and democratic development than White students. For first-year Black and Asian international students, the institution's academic expectations had a positive relationship with gains in personal and social development. Also, first-year Black students' academic expectations scores were higher than White international students for gains in civic and democratic development. First-year Asian international students' spiritual and social expectations scores were higher than White international students for GPA.

For institutional types, several differential racial/ethnic relationships were observed. In very high research universities, first-year Black international students had lower scores for GPA than White international students but seniors had higher scores than White students. First-year Hispanic international students had higher scores for gains in civic and democratic development while senior Hispanic students had higher scores for gains in personal and social development and in civic and democratic

Table 4.24

Relationship Between Institutional Factors and Success By Race/Ethnicity For First-Year and Senior International Students

	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Institutional Type										
Very High Research Universities										
Hispanic and White	-0.19	-0.16	0.11	0.15	0.22	0.25 *	0.16	0.07	0.32 **	0.24 *
Black and White	-0.61 ***	-0.38 **	0.17	0.21	0.13	0.04	0.16	0.31	0.26	-0.03
Asian and White	0.04	0.07	0.12	0.00	0.17	0.18	0.18 *	0.07	0.24 **	0.17 *
High Research Universities										
Hispanic and White	0.02	-0.08	0.00	0.07	-0.27	0.03	-0.07	0.09	-0.35 *	0.00
Black and White	0.38	0.13	-0.21	0.08	-0.36	0.24	-0.19	-0.08	-0.43	0.18
Asian and White	-0.06	-0.18	-0.01	-0.11	-0.09	-0.09	0.00	-0.11	-0.10	-0.06
Doctoral Research University										
Hispanic and White	0.04	-0.30	0.12	0.37	0.13	0.40	0.20	0.20	0.01	0.20
Black and White	0.21	0.27	0.01	0.03	0.08	0.47	-0.01	-0.25	0.20	0.43
Asian and White	0.18	-0.32 *	0.06	0.18	0.22	0.34	-0.01	0.07	0.22	0.23
Master's Colleges and Universities- Larger Program										
Hispanic and White	0.11	0.00	-0.01	0.13	-0.04	0.05	-0.09	0.11	-0.22	0.00
Black and White	0.19	0.17	-0.16	-0.18	-0.09	0.05	-0.18	-0.27	-0.21	0.08
Asian and White	0.03	-0.13	-0.16	-0.03	0.01	0.00	-0.19	-0.07	-0.05	-0.02

(continue)

Relationship Between Institutional Factors and Success By Race/Ethnicity For First-Year and Senior International Students (continued)

	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Master's Colleges and Universities - Medium Program										
Hispanic and White	0.14	-0.23	0.04	0.44	0.04	0.41	0.04	0.42	-0.07	0.29
Black and White	0.57	-0.19	-0.24	0.49	-0.25	0.50	-0.24	0.22	-0.38	0.38
Asian and White	0.19	-0.21	0.15	0.51 *	0.33	0.72 *	0.16	0.42	0.33	0.52 *
Master's Colleges and Universities - Smaller Program										
Hispanic and White	0.00	-0.03	0.64	0.11	0.78 *	0.18	0.73 *	-0.30	0.55	0.25
Black and White	0.29	0.40	0.32	0.55	0.95 **	0.69 *	0.54	0.22	0.61	0.62 *
Asian and White	0.07	-0.09	0.01	0.07	0.78 *	-0.02	0.14	-0.16	0.14	-0.07
Baccalaureate Colleges - Arts and Sciences										
Hispanic and White	0.34	-0.29	0.38	0.50	0.10	0.56 *	0.38	0.39	-0.07	0.46
Black and White	0.43	0.06	0.15	0.56	0.15	0.68 *	0.16	0.42	0.12	0.46
Asian and White	0.13	-0.31	0.12	0.38 *	0.23	0.41 *	0.14	0.42 *	0.17	0.34
Baccalaureate Colleges - Diverse Fields										
Hispanic and White	0.00	-0.04	0.21	0.49	-0.05	0.65	0.25	0.49	-0.29	0.41
Black and White	0.29	0.48	-0.29	0.35	-0.37	0.24	-0.25	0.14	-0.59	0.11
Asian and White	0.01	0.03 *	0.16	0.03	0.18	0.53	0.14	0.02	-0.02	0.42

(continue)

Relationship Between Institutional Factors and Success By Race/Ethnicity For First-Year and Senior International Students (continued)

	Grade Point Average			General Education			Personal and Social Development			Practical Competence			Civic and Democratic Development		
	FY		SR	FY		SR	FY		SR	FY		SR	FY		SR
Institutional Control															
Hispanic and White	-0.15	0.15	0.15	-0.12	-0.22	-0.22	-0.16	-0.29 *	-0.14	-0.12	-0.12	-0.09	-0.25 *		
Black and White	0.13	-0.02	-0.02	0.09	-0.13	-0.13	0.01	-0.33 *	0.14	-0.05	-0.05	-0.07	-0.24		
Asian and White	-0.09	0.07	0.07	-0.10	-0.03	-0.03	-0.20	-0.16	-0.10	-0.02	-0.02	-0.21	-0.16		
Academic Expectations															
Hispanic and White	0.10	0.28	0.28	-0.28	-0.08	-0.08	-0.46 *	0.06	-0.35	-0.02	-0.02	-0.46 *	0.11		
Black and White	-0.16	-0.20	-0.20	-0.47	-0.06	-0.06	-0.58	0.03	-0.46	0.15	0.15	-0.57	-0.04		
Asian and White	-0.09	0.04	0.04	-0.26	0.08	0.08	-0.48 *	-0.11	-0.27	0.12	0.12	-0.35	-0.10		
Spiritual and Social Expectations															
Hispanic and White	0.35	-0.25	-0.25	0.01	0.09	0.09	-0.13	0.36	-0.07	0.22	0.22	-0.04	0.34		
Black and White	0.22	0.44	0.44	-0.36	0.29	0.29	-0.41	0.97	-0.56	0.27	0.27	-0.18	0.67		
Asian and White	0.58 **	-0.31	-0.31	0.00	-0.51	-0.51	0.11	-0.56	0.02	-0.30	-0.30	0.02	-0.55		
Learning and Development Expectations															
Hispanic and White	-0.15	0.05	0.05	0.08	-0.37	-0.37	0.60	-0.44	0.20	-0.47	-0.47	0.46	-0.35		
Black and White	-0.31	0.03	0.03	0.51	-0.62	-0.62	0.77	-0.87	0.68	-0.56	-0.56	0.53	-0.48		
Asian and White	-0.27	0.16	0.16	0.07	-0.07	-0.07	0.23	0.31	0.08	-0.15	-0.15	0.31	0.34		

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

development when compared to White international students. First-year Asian students had higher scores for gains in practical competence and in civic and democratic development than White international students. Additionally, senior Asian international students had higher scores in civic and democratic development than White international students.

In high research universities, first-year Hispanic international students had higher scores for gains in civic and democratic development than White international students. In doctoral research universities, senior Asian international students had higher GPAs than White international students. In master's colleges and universities with medium programs, senior Asian international students had higher scores for gains in general education, personal and social development, and civic and democratic development than White international students.

At master's colleges and universities with smaller programs, first-year Hispanic international students had higher scores than White international students for gains in personal and social development and practical competence. First-year and senior Black international students had gains in personal and social development while senior Black international students had higher scores for gains in civic and democratic development. First-year Asian international students also had higher scores for gains in personal and social development than White international students.

Senior Hispanic international students at baccalaureate colleges in Arts and Sciences had higher scores for gains in personal and social development than White international students. Similarly, senior Black international students had higher scores

for gains personal and social development. Also, senior Asian international students had higher scores for gains in general education, personal and social development, and practical competence. Finally, for baccalaureate colleges in diverse fields, senior Asian international students had higher GPAs than White international students.

Research Question 4

To what extent do engagement and satisfaction predict international student success across institutional types for each racial or ethnic group?

In very high research universities, first-year Black international students' level of academic challenge predicted their gains in civic and democratic development rather than White international students. Also, first-year Black international students' level of satisfaction predicted gains in general education and gains in practical competence. Further, senior Asian international students' active and collaborative learning predicted their gains in personal and social development and gains in practical competence over that of White international students. Additionally, senior Asian students' level of satisfaction predicted gains in civic and democratic development. Finally, senior Hispanic international student–faculty interactions predicted their gains in practical competence over that of White students.

For high research universities, senior Black international students' level of academic challenge predicted their GPA. Senior Hispanic international students' active and collaborative learning predicted their gains in civic and democratic development when compared to White international students. Also, senior Asian international

Table 4. 25

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students

	Grade Point Average			General Education			Social Development			Personal and			Practical			Civic and		
	Democracy			Diversity			Leadership			Community			Competence			Development		
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Very High Research Universities																		
Level of Academic Challenge																		
Hispanic and White	0.14	-0.07	-0.15	-0.17	-0.03	-0.21	-0.33	-0.15	-0.04	-0.19								
Black and White	-0.15	-0.58	-0.33	-0.25	-0.05	-0.38	-0.16	-0.26	0.12 *	-0.21								
Asian and White	-0.03	-0.17	0.24	0.19	0.26	-0.12	0.12	0.23	0.16	-0.17								
Active and Collaborative Learning																		
Hispanic and White	-0.24	-0.14	0.62	0.66	0.34	0.56	0.34	0.65	0.39	0.41								
Black and White	-0.18	0.29	-0.78	0.58	-1.58	0.81	-1.62	0.56	-1.18	0.70								
Asian and White	-0.46	-0.22	0.43	0.25 *	-0.10	0.74	0.48	0.17 *	0.05	0.71								
Enriching Educational Experiences																		
Hispanic and White	-0.12	-0.21	-0.06	-0.11	-0.08	-0.33	-0.07	-0.11	0.14	-0.29								
Black and White	-0.07	-0.46	-0.05	-0.06	0.43	-0.04	0.08	-0.11	0.12	-0.10								
Asian and White	0.25	-0.18	-0.18	-0.12	-0.05	-0.19	-0.12	-0.20	-0.02	-0.14								
Student-Faculty Interactions																		
Hispanic and White	0.55	0.26	-0.49	-0.37	-0.22	0.15	-0.10	-0.44 *	-0.36	0.34								
Black and White	0.45	0.33	1.05	-0.44	1.45	-0.35	1.58	-0.42	1.16	-0.23								
Asian and White	0.54	0.38	-0.22	-0.09	0.25	-0.24	-0.25	-0.05	0.00	-0.21								
Integration and Consolidation of Diverse Ideas																		
Hispanic and White	-	-0.02	-	-0.20	-	-0.09	-	-0.14	-	0.02								
Black and White	-	0.05	-	-0.16	-	-0.39	-	-1.00	-	-0.32								
Asian and White	-	-0.08	-	0.27	-	-0.22	-	-4.71	-	-0.27								
Satisfaction																		
Hispanic and White	0.18	-0.22	-0.14	0.05	0.07	-0.06	-0.13	0.14	0.04	-0.17								
Black and White	-0.06	0.10	0.41 *	0.22	0.23	0.09	0.60 **	0.17	0.35	-0.05								
Asian and White	-0.17	-0.17	-0.20	-0.07	-0.08	-0.13	-0.17	-0.01	-0.03	-0.16 *								

continue

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students
(continued)

	Grade Point Average		General Education		Social Development		Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
High Research Universities										
Level of Academic Challenge										
Hispanic and White	0.14	-0.08	-0.15	-0.17	-0.03	-0.21	-0.33	-0.15	-0.04	-0.19
Black and White	-0.15	-0.58 *	-0.33	-0.25	-0.05	-0.38	-0.16	-0.26	0.12	-0.21
Asian and White	-0.03	-0.18	0.24	0.19	0.26	-0.12	0.12	0.23	0.16	-0.17
Active and Collaborative Learning										
Hispanic and White	-0.33	-0.25	0.62	0.66	0.34	0.56	0.34	0.65	0.39	0.41 *
Black and White	-0.18	-0.13	-0.78	0.58	-1.58	0.81	-1.62	0.56	-1.18	0.70
Asian and White	-0.46	-0.22	0.43	0.25	-0.10	0.74 *	0.48	0.17	0.05	0.71
Enriching Educational Experiences										
Hispanic and White	-0.12	-0.21	-0.06	-0.11	-0.08	-0.33	-0.07	-0.11	0.14	-0.29
Black and White	-0.07	-0.46	-0.05	-0.06	0.43	-0.04	0.08	-0.11	0.12	-0.10
Asian and White	0.25	-0.18	-0.18	-0.12	-0.05	-0.19	-0.12	-0.20	-0.02	-0.14
Student-Faculty Interactions										
Hispanic and White	0.55	0.26	-0.49	-0.37	-0.22	0.15	-0.10	-0.44	-0.36	0.34
Black and White	0.45	0.33	1.05	-0.44	1.45	-0.35	1.58	-0.42	1.16	-0.23
Asian and White	0.54	0.38	-0.22	-0.09	0.25	-0.24	-0.25	-0.05	0.00	-0.21
Integration and Consolidation of Diverse Ideas										
Hispanic and White	-	0.11	-	0.34	-	0.26	-	0.18	-	0.31
Black and White	-	0.39	-	0.23	-	0.04	-	0.20	-	0.40
Asian and White	-	0.18	-	-0.27	-	0.07 *	-	-0.33	-	0.81 **
Satisfaction										
Hispanic and White	0.18	-0.22	-0.14	0.05	0.07	-0.06	-0.13	0.14	0.04	-0.17
Black and White	-0.06	0.10	0.41	0.22	0.23	0.09	0.60	0.17	0.35	-0.05
Asian and White	-0.17	-0.17	-0.20	-0.07	-0.08	-0.13	-0.17	-0.01	-0.03	-0.16

continue

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students (continued)

	Grade Point Average			General Education			Personal and Social Development			Practical Competence			Civic and Democratic Development		
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR	
Doctoral Research Universities															
Level of Academic Challenge															
Hispanic and White	0.20	-0.01	-0.08	0.05	0.46	0.04	0.03	-0.05	0.42	0.13					
Black and White	0.52	-0.33	0.57	-0.17	0.60	0.09	0.55	-0.28	0.86	0.18					
Asian and White	0.53	-0.13	0.03	0.00	0.39	0.19	-0.14	-0.04	0.30	0.24					
Active and Collaborative Learning															
Hispanic and White	0.22	-0.35	0.29	0.41	-1.07	0.22	-0.17	0.44	-0.91	0.13					
Black and White	0.61	0.72	-0.91	-0.34	-0.61	-0.40	-1.84	-0.16	-1.55	-0.29					
Asian and White	-0.69	0.01	0.58	0.49	-0.11	0.13	0.35	0.60	0.16	0.07					
Enriching Educational Experiences															
Hispanic and White	-0.06	0.02	-0.06	0.08	-0.37	-0.16	-0.15	0.17	-0.48	-0.28					
Black and White	0.28	0.18	-0.19	0.29	-0.53	0.68	-0.10	0.10	-0.46	0.42					
Asian and White	0.46 *	0.32	-0.62 *	0.37	-0.63 *	0.49	-0.53	0.23	-0.79 **	0.31					
Student-Faculty Interactions															
Hispanic and White	-0.08	0.27	-0.37	-0.84	0.68	-0.27	-0.02	-0.71	0.79	-0.04					
Black and White	-0.34	-0.61	0.40	0.26	0.28	-0.12	1.30	0.45	0.92	-0.13					
Asian and White	0.43	-0.33	-0.30	-0.52	0.19	-0.71	-0.03	-0.49	0.13	-0.56					
Integration and Consolidation of Diverse Ideas															
Hispanic and White	-	-0.07	-	0.16	-	-0.26	-	0.19	-	-0.30					
Black and White	-	-0.28	-	-0.84	-	-0.02	-	-0.91	-	-0.12					
Asian and White	-	-0.42	-	-0.37	-	-0.05	-	-0.15	-	-0.42					
Satisfaction															
Hispanic and White	-0.10	-0.15	0.10	0.00	0.15	-0.21	0.10	0.14	-0.01	-0.29					
Black and White	-0.15 **	0.38	0.11 **	0.29	0.82	-0.08	1.19 **	0.32	0.87 *	-0.24					
Asian and White	-0.52 *	0.22	0.08	-0.17	0.06	0.06	0.12	-0.04	0.09	0.08					

continue

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students
(continued)

	Grade Point Average		General Education		Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Master's Colleges & Universities - Larger Programs										
Level of Academic Challenge										
Hispanic and White	-0.04	0.05	0.06	0.05	0.25	0.24	-0.04	-0.02	0.22	0.27
Black and White	-0.64	-0.32	0.17	-0.35	0.68	-0.15	0.27	-0.34	0.81 *	0.04
Asian and White	-0.08	0.00	0.20	0.05	0.32	0.10	0.19	0.00	0.24	0.10
Active and Collaborative Learning										
Hispanic and White	-0.14	-0.47	0.74	0.76	0.35	0.59	0.67	0.77	0.62	0.35
Black and White	0.83	0.44	-0.48	0.82	-0.54	0.50	-1.36	0.92	-0.41	0.23
Asian and White	-0.18	-0.22	-0.49	0.55	-0.50	0.72 *	-0.53	0.69 *	-0.33	0.56
Enriching Educational Experiences										
Hispanic and White	-0.05	-0.06	-0.07	-0.06	-0.05	-0.14	-0.14	0.13	0.04	-0.16
Black and White	0.08	-0.32	0.05	-0.04	0.27	0.07	0.04	-0.01	0.13	-0.04
Asian and White	0.03	-0.04	-0.16	-0.12	-0.23	-0.10	-0.14	-0.02	-0.21	-0.10
Student-Faculty Interactions										
Hispanic and White	0.36	0.39	-0.88	-0.63 *	-0.62	-0.35	-0.68	-0.87 **	-0.83	-0.08
Black and White	-0.12	0.37	-0.20	-0.69	-0.47	-0.26	0.54	-0.36	-0.50	-0.18
Asian and White	0.34	0.17	0.33	-0.24	0.34	-0.48 *	0.35	-0.57 *	0.17	-0.40
Integration and Consolidation of Diverse Ideas										
Hispanic and White	-	0.04	-	0.02	-	0.21	-	-0.02	-	0.22
Black and White	-	-0.15	-	0.10	-	0.44	-	-0.20	-	0.48
Asian and White	-	0.03	-	-0.12	-	0.38	-	-0.14	-	0.37
Satisfaction										
Hispanic and White	0.06	-0.09	-0.11	-0.02	-0.03	-0.23	-0.12	0.12	-0.15	-0.28
Black and White	0.09 *	0.08	0.10 **	0.13	0.65	0.21	1.15 ***	0.04	0.66	0.14
Asian and White	-0.05	0.03	0.03	-0.13	-0.01	-0.31	0.06	-0.06	-0.02	-0.30 *

continue

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students
 (continued)

	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Master's Colleges & Universities - Medium Programs										
Level of Academic Challenge										
Hispanic and White	0.54	-0.05	-0.31	0.11	-0.06	0.15	-0.47	0.14	0.06	0.01
Black and White	0.03	-0.27	-0.33	-0.02	0.77	-0.05	-0.08	-0.06	0.91 *	0.14
Asian and White	0.11	-0.13	0.11	0.37	0.11	0.60	-0.02	0.30	-0.07	0.46
Active and Collaborative Learning										
Hispanic and White	-0.72	-0.59	-0.24	0.72	0.13	1.01	-0.13	0.56	0.13	1.00
Black and White	-0.08	-1.70	-0.29	0.83	-0.63	2.45	-1.34	1.04	-0.28	1.93
Asian and White	-0.94	0.20	-0.84	0.10	-0.41	-0.03	-0.60	0.11	0.03	0.15
Enriching Educational Experiences										
Hispanic and White	-0.30	0.23	0.23	-0.78	-0.18	-0.47	0.07	-0.69	-0.22	-0.29
Black and White	0.32	-0.76	0.76	-0.72	0.11	-1.46	0.57	-0.57	-0.14	-1.12
Asian and White	-0.10	0.19	-0.04	-0.64	-0.38	0.10	-0.08	-0.66	-0.45	0.33
Student-Faculty Interactions										
Hispanic and White	0.81	-0.03	0.63	-0.12	0.41	-0.82	0.75	-0.07	0.32	-0.79
Black and White	0.15	-1.40	0.06	0.14	0.00	-1.11	0.94	-0.13	-0.38	-1.26
Asian and White	1.31	-0.50	1.13	0.53	0.98	-0.41	0.98	0.61	0.60	-0.69
Integration and Consolidation of Diverse Ideas										
Hispanic and White	-	0.19	-	-0.01	-	-0.08	-	-0.02	-	-0.32
Black and White	-	2.29	-	0.42	-	0.02	-	-0.26	-	2.07
Asian and White	-	0.84	-	-0.26	-	-0.12	-	-0.05	-	-0.24
Satisfaction										
Hispanic and White	-0.03	0.26	-0.27	0.14	-0.15	0.03	-0.26	0.30	-0.28	-0.19
Black and White	-0.32	0.34	0.77	-0.20	0.28	-0.24	0.95 *	0.02	0.58	-0.29
Asian and White	-0.24	0.10	-0.18	0.27	-0.16	-0.15	-0.16	0.32	0.02	-0.42

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students
(continued)

	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Master's Colleges & Universities - Smaller Programs										
Level of Academic Challenge										
Hispanic and White	-0.04	-0.16	0.38	0.42	0.22	-0.31	0.31	0.32	0.54	-0.37
Black and White	0.25	-1.00	0.30	-0.39	0.48	-0.56	0.30	-0.48	0.56	-0.39
Asian and White	0.55	0.02	-0.85	1.05 *	-0.12	0.24	-0.85	0.95 *	-0.30	0.04
Active and Collaborative Learning										
Hispanic and White	2.63	-0.96	-0.06	0.52	-1.65	-0.01	-0.11	2.80 *	-3.49	-0.38
Black and White	0.78	2.64	-0.17	4.94 *	-1.99	3.78 *	-1.14	1.76	-1.33	5.13 *
Asian and White	-0.43 *	-0.25	0.16 *	-0.09	5.55	-0.53	0.18 *	-0.01	4.36	-0.66
Enriching Educational Experiences										
Hispanic and White	-0.18	-0.14	0.21	0.34	-0.41	0.14	-0.11	0.79	0.12	-0.07
Black and White	0.27	0.42	0.01	-0.77	-0.05	-1.13	-0.06	-0.30	-0.08	-1.04
Asian and White	-0.37	-0.14	-1.24	-0.28	-0.39	0.39	-1.50	-0.04	-0.58	0.60
Student-Faculty Interactions										
Hispanic and White	-2.06	0.43	-0.19	-1.30	1.87	-0.64	0.01	-2.65 *	2.75	0.13
Black and White	-0.72	-0.93	0.01	-0.91	1.46	-1.92	0.79	-1.29	0.98	-1.73
Asian and White	1.35 *	0.49	-0.14 *	0.30	-5.37	0.07	-0.16 *	-0.09	-4.21	0.17
Integration and Consolidation of Diverse Ideas										
Hispanic and White	-	0.59	-	-1.62	-	-0.20	-	-1.98 *	-	-0.20
Black and White	-	-0.84	-	-1.86	-	-11.00	-	-1.60	-	-0.86
Asian and White	-	0.43	-	-2.02 *	-	-0.01	-	-1.76	-	-0.67
Satisfaction										
Hispanic and White	0.11	-0.73 *	-0.41	-0.05	-0.84	0.52	-0.42	0.04	-1.35 *	0.47
Black and White	0.17 **	0.96	0.49	0.35	0.07	0.31	0.61	0.53	0.25	0.14
Asian and White	0.02	-0.12	-0.81	-0.53	-0.14	-0.46	-0.75	-0.32	-0.16	-0.42

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students (continued)

	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Baccalaureate Colleges - Arts and Sciences										
Level of Academic Challenge										
Hispanic and White	-0.27	0.03	-0.14	0.42	0.59	0.25	-0.17	0.33	0.48	0.22
Black and White	-0.18	0.08	-0.06	-0.29	0.78	0.04	0.20	-0.24	0.81	0.35
Asian and White	0.08	0.28	-0.09	-0.02	0.27	0.06	-0.02	-0.05	0.21	0.04
Active and Collaborative Learning										
Hispanic and White	-0.28	1.00	0.90	-0.09	0.36	-0.16	0.67	0.32	0.11	-0.47
Black and White	-1.40	-0.42	-0.59	1.03	-1.61	-0.45	-2.04	2.38 *	-1.65	-0.92
Asian and White	-1.09	-0.47	-0.48	1.22 *	-0.68	0.37	-0.75	1.21 *	-0.64	0.25
Enriching Educational Experiences										
Hispanic and White	0.36	0.03	-0.01	0.62	-0.09	-0.06	0.04	0.88 *	0.11	-0.30
Black and White	0.42	-0.14	0.16	-0.12	0.06	0.14	0.34	-0.08	0.16	0.14
Asian and White	0.48	-0.09	-0.08	0.15	0.01	0.16	0.07	0.21	0.16	0.16
Student-Faculty Interactions										
Hispanic and White	0.49	-0.24	-0.61	-0.65	-0.76	0.09	-0.51	-1.04	-0.56	0.66
Black and White	1.46	0.32	0.47	-0.57	0.72	0.30	1.45	-0.61	0.73	0.44
Asian and White	1.01	0.27	0.62	-0.43	0.45	-0.41	0.74	-0.55	0.30	-0.28
Integration and Consolidation of Diverse Ideas										
Hispanic and White	-	-0.56	-	-0.17	-	0.05	-	-0.04	-	0.01
Black and White	-	0.42	-	-0.95	-	-0.54	-	-0.99	-	-0.34
Asian and White	-	0.03	-	-0.74 *	-	-0.03	-	-0.48	-	0.09
Satisfaction										
Hispanic and White	0.09 *	-0.18	-0.60 *	-0.14	-0.05	-0.21	-0.52	-0.13	-0.09	-0.16
Black and White	-0.32	0.18	0.92 *	-0.23	0.77	-0.17	1.04 *	-0.38	0.71	-0.02
Asian and White	-0.36	-0.24	0.08	0.01	0.07	-0.06	0.02	0.06	-0.01	-0.13

continue

Engagement and Satisfaction Predicting Success Across Institutional Types By Race/Ethnicity of First-Year and Senior International Students (continued)

	Grade Point Average		General Education		Personal and Social Development		Practical Competence		Civic and Democratic Development	
	FY	SR	FY	SR	FY	SR	FY	SR	FY	SR
Baccalaureate Colleges - Diverse Fields										
Level of Academic Challenge										
Hispanic and White	0.06	0.94	-0.03	-0.11	0.23	0.53	-0.08	-0.11	0.30	0.77
Black and White	0.13	1.11	-0.31	0.35	0.28	-0.66	-0.18	0.27	0.10	-0.66
Asian and White	0.25	1.74	0.13	-0.71	0.44	-0.91	0.25	-0.46	0.31	-0.98
Active and Collaborative Learning										
Hispanic and White	-0.68	-2.26	-0.06	3.04	-0.09	-0.56	-0.09	3.09	0.01	-1.62
Black and White	-0.96	-2.03	-1.49	2.41	-0.79	0.72	-2.42	2.85	-0.68	0.07
Asian and White	-1.22	2.14	-0.81	3.26	0.83	1.32	-0.68	3.22	1.16	0.86
Enriching Educational Experiences										
Hispanic and White	0.45	-2.10	-0.19	-0.71	-0.07	0.53	-0.31	0.39	0.09	0.30
Black and White	0.87	-2.09	-0.43	-1.28	-0.46	0.70	-0.55	-0.27	-0.49	0.83
Asian and White	0.27	-2.25	-0.32	0.21	-0.30	1.61	-0.21	0.83	-0.05	1.52
Student-Faculty Interactions										
Hispanic and White	1.03	-0.60	0.02	-2.76	-0.58	0.08	0.08	-4.29 *	-0.75	1.27
Black and White	0.58	-0.64	1.15	-1.54	-0.55	0.90	1.93	-2.47	-0.48	1.39
Asian and White	1.43	-0.95	0.94	-3.46	-1.52	-1.42	0.55	-4.12	-1.92	-0.66
Integration and Consolidation of Diverse Ideas										
Hispanic and White	-	3.02	-	5.78	-	-0.06	-	5.11	-	-2.34
Black and White	-	3.10	-	5.74	-	0.37	-	5.97	-	-2.23
Asian and White	-	0.81	-	7.62	-	0.02	-	4.89	-	-0.55
Satisfaction										
Hispanic and White	0.11	0.76	-0.28	0.35	-0.08	-0.53	-0.19	0.20	-0.24	-0.66
Black and White	-0.03 *	0.61	0.92 *	-0.10	1.05 *	-1.69	1.14 **	-0.10	0.95 *	-1.85
Asian and White	-0.89 *	0.91	-0.23	1.28	0.03	-0.36	-0.06	1.32	0.04	-0.96

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

students' active and collaborative learning predicted their gains in personal and social development when compared to White students. Integration and consolidation of diverse ideas predicts senior Asian international students' gains in personal and social development and gains in civic and democratic development.

First-year Asian international students in doctoral research universities engagement in enriching educational experiences predicted their GPA, gains in general education, gains in personal and social development, and gains in civic and democratic development. Likewise, first-year Asian students' level of satisfaction predicted their GPA. First-year Black international students' level of satisfaction also predicted GPA, gains in general education, practical competence, and civic and democratic development.

In master's colleges and universities with larger programs, first-year Black international students' level of academic challenge predicted their gains in civic and democratic development. Similarly, their level of satisfaction predicted their GPA, gains in general education and practical competence. Meanwhile, senior Black international students' active and collaborative learning predicted their gains in practical competence. Senior Hispanic international students' active and collaborative learning predicted their gains in general education and gains in practical competence. Senior Asian international students' active and collaborative learning predicted their gains in general education, personal and social development, and practical competence. Student–faculty interactions for senior Hispanic predicted gains in general education, and practical competence. For senior Asian international students, student–faculty interactions predicted gains in personal and social development and practical competence while satisfaction predicted

gains in civic and democratic development.

For master's colleges and universities with medium programs, first-year Black international students' level of academic challenge predicted their gains in civic and democratic development while their level of satisfaction predicted their gains in practical competence. In master's colleges and universities with smaller programs, first-year Asian international students' level of academic challenge predicted gains in general education and practical competence. Senior Hispanic students' active and collaborative learning predicted their gains in practical competence. Senior Black international students' active and collaborative learning predicted gains in general education, gains in personal and social development and gains in civic and democratic development. Student-faculty interactions for first-year Asian students predicted GPA, gains in general education, and practical competence. For senior Hispanic students, student-faculty interactions predicted gains in practical competence. Senior Hispanic students' integration and consolidation of diverse ideas predicted gains in practical competence and for Senior Asian students, it predicted gains in general education. First-year Hispanic international students' level of satisfaction predicted gains in civic and democratic development and for senior Hispanic students, it predicted GPA. For first-year Black international students' level of satisfaction predicted their GPA.

In baccalaureate colleges in Arts and Sciences, senior Black students' active and collaborative learning predicted gains in practical competence while senior Asian students' active and collaborative learning predicted gains in general education and gains in practical competence. Senior Hispanic students' integration and consolidation of

diverse ideas predicted gains in general education. First-year Hispanic international students' level of satisfaction predicted their GPA and gains in general education and first-year Black international students' satisfaction also predicted gains in general education and practical competence. Senior Hispanic international students' engagement in enriching educational experiences predicted gains in practical competence.

Finally, first-year Black international students' level of satisfaction predicted their GPA, gains in general education, gains in personal and social development, gains in practical competence, and gains in civic and democratic development. For first-year Asian international students' level of satisfaction also predicted their GPA. Senior Hispanic international student–faculty interactions predicted gains in practical competence for both groups of students. This section ends the reporting of results for research questions. The next section presents the analysis for model comparisons.

Selection of Models for Cross Validation

The goal of science is to explain the world in the simplest way possible (Van Belle, 2008). A brief examination of the model outputs for this study revealed that among the significant variables were other nonsignificant ones that did not add to the predictive value of the model. Based on the results, I proceeded with reducing the models to become more parsimonious by eliminating any variable (factor) or level that was not statistically significant in the model. The full process employed is described next.

To achieve parsimony, first I began with the control variables reducing those variables to statistically significant variables. Second, I added the key predictor(s) of interest. I continued the process until all remaining variables were statistically

significant. Therefore, the new prediction models for cross validation are displayed in Table 4.26 to 4.29.1. For each of those models, the variables remaining were significant Table 4.26

Estimates for Models Predicting Engagement for First-Year International Students

Parameters	Level of Academic Challenge		Active and Collaborative Learning		Enriching Educational Experiences		Student-Faculty Interactions	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.08	0.09	-0.27 ***	0.13	-0.27 *	0.13	-0.18 **	0.05
Level 1 (Student)								
Major			-0.20 *	0.10	-0.69 ***	0.16		
Father's Graduate Education	0.24 **	0.09			0.14 *	0.07		
Mother's Education:								
Undergraduate			0.12 **	0.04				
Graduate			0.19 ***	0.05			0.16 **	0.06
Enrollment Status					0.35 **	0.13		
Student Perception:								
Support for success	0.30 ***	0.06	0.33 ***	0.02	0.35 ***	0.04	0.33 ***	0.04
Interpersonal environment	0.13 *	0.06	0.11 ***	0.03			0.23 ***	0.04
Satisfaction			0.10	0.03				
Race/Ethnicity:								
Hispanic			0.19 ***	0.05				
Black			0.23 **	0.07				
Asian			0.19 ***	0.04			0.16 **	0.06
Gender: female	-0.19 *	0.09						
Level 2 (Institution)								
Academic	0.44 *	0.19	0.35 ***	0.08			0.45 ***	0.12
Spiritual and Social Learning and Dev.				0.09				
Institutional Types:								
4					-0.14 *	0.07		
5	-0.22 *	0.11						
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.01	0.08	0.00	0.00	0.03	0.16
Level 1								
Intercept/Intercept	0.69	0.83	0.59	0.77	0.58	0.76	0.50	0.70

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.27

Estimates for Models Predicting Engagement for Senior International Students

Parameters	Level of Academic		Active and Collaborative		Enriching Educational		Student-Faculty	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.05	0.04	-0.05	0.04	-0.09	0.06	-0.47	0.11
Level 1 (Student)								
Age					-0.23 ***	0.04		
Transfer					-0.18 ***	0.04		
Enrollment Status					0.26 ***	0.05	0.34 **	0.10
Student Perception:								
Support for success	0.36 ***	0.03	0.43 ***	0.03	0.34 ***	0.02	0.29 ***	0.06
Interpersonal environment							0.18 **	0.07
Race/Ethnicity:								
Hispanic	0.20 ***	0.05	0.28 ***	0.05	0.19 ***	0.05	0.23 **	0.08
Black					0.13 *	0.06		
Asian					0.13 **	0.04		
Level 2 (Institution)								
Institutional Types:								
2							0.18 *	0.08
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.02	0.12	0.02	0.15	0.00	0.00
Level 1								
Intercept/Intercept	0.77	0.88	0.69	0.83	0.62	0.79	0.64	0.80

(continue)

*Estimates for Models Predicting Engagement for Senior International Students
(continued)*

Parameters	Integration and Consolidation of Diverse Ideas	
	Est.	SE
Intercept	-0.04	0.04
Level 1 (Student)		
Student Perception:		
Support for success	0.37 ***	0.03
Race/Ethnicity:		
Hispanic	0.27 ***	0.06
Black	0.16 *	0.07
Level 2 (Institution)		
Learning and Development	0.54 ***	0.09
Random parameters		
Level 2	Var	SD
Intercept/intercept	0.00	0.00
Level 1		
Intercept/Intercept	0.79	0.89

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation,

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

Table 4.28

Estimates for Models Predicting Success for First-Year International Students

Parameters	Cumulative GPA		General Education		Personal and Social		Practical Competence	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	3.38 ***	0.04	0.00	0.01	-0.08 *	0.03	-0.07	0.07
Level 1 (Student)								
Age	0.31 ***	0.07						
Major	-0.23 *	0.10						
Residence	-0.12 **	0.04						
Student Perception:								
Support for success			0.34 ***	0.02	0.33 ***	0.03	0.43 ***	0.05
Satisfaction	0.09 ***	0.02	0.26 ***	0.02	0.22 ***	0.02	0.30 ***	0.05
Race/Ethnicity:								
Hispanic	-0.17 ***	0.04					0.18 *	0.08
Black	-0.25 ***	0.06						
Asian					0.12 **	0.04		
Gender - female	0.13 **	0.04						
Level of Academic Challenge	0.09 **	0.03	0.26 ***	0.02	0.21 ***	0.03	0.28 ***	0.05
Active and Collaborative Learning	0.21 **	0.08						
Enriching Educational Experiences								
Student-Faculty Interactions	-0.24 **	0.08	0.08 ***	0.02	0.11 **	0.03		
Level 2 (Institution)								
Academic Expectations			0.24 ***	0.05			0.68 **	0.21
Institutional Types:								
6							-0.34 *	0.16
7							-0.32 **	0.12
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.10	0.00	0.00	0.03	0.17	0.02	0.14
Level 1								
Intercept/Intercept	0.42	0.65	0.42	0.65	0.43	0.66	0.36	0.60

(continued)

Estimates for Models Predicting Success for First-Year International Students (continued)

Parameters	Civic and Democratic Development			
	Est.		SE	
Fixed effects				
Intercept	-0.09	**	0.03	
Level 1 (Student)				
Student Perception:				
Support for success	0.34	***	0.02	
Satisfaction	0.18	***	0.02	
Race/Ethnicity:				
Asian	0.14	***	0.04	
Level of Academic Challenge	0.12	***	0.03	
Enriching Educational Experiences	0.12	***	0.03	
Student-Faculty Interactions	0.12	***	0.03	
Random parameters				
Level 2	Var		SD	
Intercept/intercept	0.03		0.18	
Level 1				
Intercept/Intercept	0.40		0.64	

Note . Est = estimate, SE = standard error, Var = variance

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

Table 4.29

Estimates for Models Predicting Success for Senior International Students

Parameters	Cumulative GPA		General Education		Personal and Social		Practical Competence	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	3.34	0.07	0.00	0.02	-0.15	0.03	-0.09	0.03
Level 1 (Student)								
Father's graduate education	0.17	**	0.06					
Student Perception:								
Support for success			0.32	***	0.03	0.52	***	0.03
Interpersonal Environment					0.10	***	0.03	
Satisfaction			0.30	***	0.02			0.26
Race/Ethnicity:								
Hispanic	-0.23	***	0.07		0.23	***	0.05	
Black	-0.39	***	0.08		0.21	***	0.04	0.19
Asian								0.11
Level of Academic Challenge			0.19	***	0.02			0.18
Active and Collaborative Learning	0.08	**	0.03					0.27
Student-Faculty Interactions			0.30	***	0.02			-0.20
Integration and Consolidation			0.26	***	0.03	0.29	***	0.02
Level 2 (Institution)								
Institutional Types:								
3	0.26	**	0.09					
4	0.16	*	0.07					
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.01	0.09	0.00	0.00	0.01	0.09
Level 1								
Intercept/Intercept	0.37	0.61	0.47	0.69	0.61	0.78	0.44	0.66

(continued)

*Estimates for Models Predicting Success for Senior International Students
(continued)*

Parameters	Civic and Democratic Development		
	Est.		SE
	Fixed effects		
Intercept	-0.19	***	0.04
Level 1 (Student)			
Student Perception:			
Support for success	0.39	***	0.03
Satisfaction	0.13	***	0.03
Race/Ethnicity:			
Hispanic	0.19	***	0.05
Asian	0.16	***	0.04
Active and Collaborative Learning	-0.11	*	0.05
Enriching Educational Experiences	0.11	***	0.03
Integration and Consolidation	0.25	***	0.04
Level 2 (Institution)			
Institutional Types:			
2	0.13	**	0.06
4	0.10	*	0.05
7	0.14	*	0.06
	Random parameters		
Level 2	Var		SD
Intercept/intercept	0.00		0.00
Level 1			
Intercept/Intercept	0.50		0.71

Note. Est = estimate, SE = standard error, Var = variance component,

SD = standard deviation

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

predictors in each case. Several checks of the models were necessary to ensure that the new models had greater predictive value than the previous models. So next I did model comparisons and then checked some key assumptions of linear modeling to ensure there was no extreme violation of those key assumptions. For each model, I checked for the assumptions of normality, linearity, and heterodasticity.

In HLM, one way to compare or check models to determine best fit is to assess Deviance, Akaike's Information Criterion (AIC), and Bayesian Information Criterion (BIC) values (Luke, 2004). Hence, I examined the model outcomes using the Deviance, AIC, and BIC figures as measures of model fit to determine the best fitted model. The guide rule is that lower values for these measures implied better model fit (Luke, 2004). Tables 4.30 and 4:30.1 present the details for model comparisons.

Table 4:30 presents reduced models for first-year international students while Table 4:30.1 present reduced models for senior international students. In each case, 3 models are compared: the null model, the original prediction model, and the reduced model. A close examination of the results for AIC, BIC, and Deviance revealed that the reduced models were better fitting models in each case except in the case of gains in general education for first-year international students.

The difference between the original model and the reduced model for gains in general education was 35 for AIC and 111 for BIC and 87 for Deviance. This difference is less than crucial when considering parsimony as a goal of science. Therefore, I decided to use the reduced model instead of the original model because it was simply more parsimonious.

Table 4.30

Prediction Model Fit Comparisons for First-Year International Students' Engagement and Success

	Model 1			Model 2			Model 3		
	AIC	BIC	Deviance	AIC	BIC	Deviance	AIC	BIC	Deviance
Engagement									
Level of Academic Challenge	5246	5263	5240	4858	5273	4710	889.7	924.6	871.7
Active and Collaborative Learning	5238	5255	5232	4735	5150	4587	4670	4754	4640
Enriching Educational Experiences	4994	5011	4988	4746	5161	4598	1284	1322	1266
Student-Faculty Interactions	5265	5281	5259	*4756	5092	4636	1484	1520	1468
Success									
GPA	4133	4150	4127	4014	4216	3942	2396	2462	2370
General Education	5335	5352	5329	3908	4099	3840	3943	3988	3927
Personal and Social Development	5382	5399	5376	4200	4385	4134	2814	2861	2796
Practical Competence	5343	5360	5337	3917	4102	3851	505.3	541	485.3
Civic and Democratic Development	5210	5227	5204	4131	4316	4065	2729	2776	2711

Notes: Model 1 is the null model. Model 2 consists of all student characteristics, student perception, satisfaction, and college environment variables, additionally, interaction terms for gender and race/ethnicity, gender and institutional types, and race/ethnicity and institutional types in the case of engagement; and engagement instead of the interaction terms in the case of success. Model 3 consists of a reduced number of variables based on statistical significance.

* Only fixed effects

Table 4.30.1

Prediction Model Fit Comparisons for Senior International Students' Engagement and Success

	Model 1			Model 2			Model 3		
	AIC	BIC	Deviance	AIC	BIC	Deviance	AIC	BIC	Deviance
Engagement:									
Level of Academic Challenge	5892	5909	5886	*5588	5939	5464	2742	2766	2732
Active and Collaborative Learning	5874	5891	5868	5361	5792	5209	2654	2679	2644
Enriching Educational Experiences	5585	5602	5579	5177	5608	5025	5156	5212	5136
Student-Faculty Interactions	5749	5766	5743	5136	5312	5074	1012	1044	995.9
Integration and Consolidation of Diverse Ideas	6029	6046	6023	5557	5988	5405	3379	3415	3365
Success:									
GPA	4096	4113	4090	3905	4109	3833	868.8	906.1	850.8
General Education	6076	6093	6070	4568	4948	4434	4539	4584	4523
Personal and Social Development	6360	6377	6354	5005	5210	4933	4516	4560	4500
Practical Competence	5709	5726	5703	4337	4541	4265	3459	3513	3439
Civic and Democratic Development	5743	5760	5737	4636	4841	4564	3448	3518	3422

Notes: Model 1 is the null model. Model 2 consists of all student characteristics, student perception, satisfaction, and college environment variables, additionally, interaction terms for gender and race/ethnicity, gender and institutional types, and race/ethnicity and institutional types in the case of engagement; and engagement instead of the interaction terms in the case of success. Model 3 consists of a reduced number of variables based on statistical significance.

* Only fixed effects

Before proceeding with the cross validation analysis, I ensured that the newly reduced models were in fact appropriate for the proposed analysis by testing the residual values to see if they satisfied HLM assumptions. Figure 4.7 to 4.10 (see appendix B) display the results of the tests for HLM assumptions associated with each model. Based on those results, I concluded that there was no obvious violation of the assumptions so each model was accepted and used for cross validation analysis.

Cross Validation Analysis

In this section, the specific goals were to: (a) confirm the structure and loadings of the major factors under consideration in this study, that is, engagement, success, student perception, and campus or college environment; and (b) assess the usability of the prediction models in future studies. These goals were achieved using a new sample of international students. Confirmatory factor analysis was performed using Lisrel 8.80.

Descriptive Analyses

The cross validation sample consisted of the two groups of international students: first-year $N = 549$ and senior $N = 599$. After accounting for missing data, the final numbers used for analysis were $N = 465$ and 559 respectively. Table 4.31 summarizes the key characteristics of each group of students. Given the smaller sample size, the actual number of participants in some of the subsample areas was far less than ideal to make generalizable conclusions. For example, only 13 or 14 first-year international students represented the category “undecided” for academic majors. This limitation of sample size resulted in inconclusive findings which should be retested in future studies.

Table 4.31

Description of the First-Year and Senior International Students Cross Validation Sample

Characteristics		First Years (n = 465)	Seniors (n = 559)
		%	%
Race/Ethnicity:			
Asian		43	39
Black		8	12
Hispanic		20	21
White		29	27
Gender:			
Male		44	42
Female		56	58
Age:			
17 - 23 years		93	54
24 - over 55 years		7	46
Enrollment Status:			
Full-time		92	86
Part-time		8	14
Parent Education:			
Father: High School		33	34
Undergraduate		39	43
Graduate		28	23
Mother: High School		17	39
Undergraduate		50	46
Graduate		16	15
Residence:			
On-campus		54	16
Off-campus		46	84
Major: First Year	Senior		
Selected	Arts and Humanities	97	26
Undecided	STEM	3	21
	Business and Professional		36
	Social Science and Education		17

(continued)

*Description of the First-Year and Senior International Students Cross Validation Sample
(continued)*

Characteristics	First-Years (n = 465)	Seniors (n = 559)
	%	%
Grades:		
A	46	44
B	42	50
C	10	5
C- and Below	2	<1
Transfer Status		
Non transfer	85	40
Transfer	15	60
Institution Control		
Private	34	26
Public	66	74
Institutional Types:		
Research Universities (very high research activity)	26	22
Research Universities (high research activity)	17	19
Doctoral/Research Universities	9	8
Masters College and Universities (larger programs)	24	33
Masters Colleges and Universities (medium programs)	8	4
Masters Colleges and Universities (smaller programs)	4	3
Baccalaureate Colleges-Arts & Sciences	9	9
Baccalaureate Colleges-Diverse Fields	3	2

Note. STEM = Science, Technology, Engineering, and Mathematics.

^a Under major, the first list of options represents first year students' choice of a major; the second list represents seniors' selected majors.

A crude, nonstatistical comparison of the descriptive tables for the main research groups (Table 4.1) and the cross validation groups (Table 4. 31) led to the conclusion that the groups were compatible in their descriptive characteristics, that is, the percentages for first-year and senior international students for each descriptive characteristic were similar in both groups. This acknowledgment does not negate the fact that these students may be otherwise different. Next, I present the results for factor analysis.

Factor Analysis – Confirmatory Factor Analysis

The modified models identified by CFA for first-year and senior international students were tested using the cross validation groups. The results of CFA are presented in Tables 4.32 and 4.32.1. The Cronbach alphas for the 14 scales in the study for first-year international students were: level of academic challenge .63, active and collaborative learning .76, enriching educational experiences .69, student–faculty interactions .75, gains in general education .80, gains in personal and social development .86, gains in practical competencies .79, gains in civic and democratic development .75, support for student success .75, interpersonal environment .77, student satisfaction .71, academic expectations .70, spiritual and social expectations .44, and learning and development expectations .74.

For the senior international students, the Cronbach alphas were: level of academic challenge .72, active and collaborative learning .65, enriching educational experiences .77, student–faculty interactions .78, integration and consolidation of diverse ideas .66, gains in general education .83, gains in personal and social development .84, gains in practical competencies .76, support for student success .80, interpersonal environment .74, student satisfaction .80, spiritual and social expectations .51, and learning and development expectations .78.

The Goodness of Fit indices are presented in Table 4.32.2. The first-year international students' model had fit indices of RMSEA .051, NFI .92, CFI .96, SRMR .16 and PCLOSE .07. Of the 5 indices only 1 index, CFI, achieved a level of

Table 4.32

Factor Loadings for Confirmatory Factor Analysis on Student Engagement and Success Scales for Cross Validation Sample of First-Year and Senior International Students

Scale	First-Year	Senior
Engagement		
Level of Academic Challenge	0.63	0.72
Synthesizing and organizing ideas, information, or experiences	0.79	0.80
Analyzing the basic elements of an idea, experience, or theory	0.72	0.75
Making judgments about the value of information, arguments, or methods	0.73	0.78
Applying theories or concepts to practical problems or in new situations	0.69	0.69
Number of hours per week spending on preparing for class	0.22	0.35
Number of written papers or reports between 5 and 19 pages	0.25	0.35
Number of assigned textbooks, books, or packs of course readings	0.18	0.30
Number of written papers or reports of 20 pages or more	0.06	0.18
Number of written papers or reports of fewer than 5 pages	0.18	0.19
Spending significant amounts of time studying and on academic work		0.19
Active and Collaborative Learning	0.76	0.65
Made a class presentation	0.49	0.56
Discussed ideas from readings or classes with others outside of class	0.44	0.56
Worked with peers outside of class on assignments	0.47	0.48
Asked questions in class or contributed to class discussions	0.47	0.47
Worked with other students on projects during class	0.46	0.45
Used an electronic medium to discuss or complete an assignment	0.41	0.31
Put together ideas or concepts from different courses for assignment	0.50	
Participated in a community-based project as part of a regular course	0.47	
Tutored or taught other students (paid or voluntary)	0.42	
Included diverse perspectives in class discussions or writing assignments	0.33	
Worked harder than you thought you could to meet standards		0.48
Enriching Educational Experiences	0.69	0.77
Tutored or taught other students		0.62
Participated in a community-based project as part of a regular course		0.60
Participate in a learning community or some other formal program	0.61	0.49
Community service or volunteer work	0.42	0.48
Culminating senior experience	0.58	0.43
Participating in co-curricular activities	0.19	0.43
Work on research project with outside faculty member	0.58	0.42
Worked with faculty members on activities other than coursework		0.41
Had serious conversations with students who are very different from you	0.26	0.36

(continued)

Factor Loadings for Confirmatory Factor Analysis on Student Engagement and Success Scales for Cross Validation Sample of First-Year and Senior International Students (continued)

Scale	First-Year	Senior
Had serious conversations with students of a different race or ethnicity	0.29	0.36
Practicum, internship, field experience, co-op experience, or clinicals	0.46	0.35
Independent study or self-designed major	0.47	0.33
Study abroad	0.36	0.27
Foreign language coursework	0.34	0.25
Student-Faculty Interaction	0.75	0.78
Discussed ideas from readings/classes with faculty outside of class	0.65	0.77
Talked about career plans with a faculty member or advisor	0.59	0.69
Worked with faculty members on activities other than coursework	0.54	0.36
Discussed grades or assignments with an instructor	0.55	0.56
Received prompt written or oral feedback from faculty on performance	0.57	0.58
Worked harder than you thought you could to meet standards	0.48	
Used e-mail to communicate with an instructor	0.38	
Success		
Gains in General Education	0.80	0.83
Thinking critically and analytically	0.81	0.77
Speaking clearly and effectively	0.74	0.76
Writing clearly and effectively	0.78	0.77
Acquiring a broad general education	0.68	0.62
Spending significant amounts of time studying and on academic work	0.46	
Learning effectively on your own		
Gains in Personal and Social Development	0.86	0.84
Developing a personal code of values and ethics	0.87	0.84
Understanding yourself	0.74	0.76
Understanding people of other racial and ethnic backgrounds	0.74	0.73
Learning effectively on your own	0.48	0.67
Solving complex real-world problems	0.80	
Gains in Practical Competencies	0.79	0.76
Working effectively with others	0.79	0.77
Analyzing quantitative problems	0.76	0.69
Acquiring job or work-related knowledge and skills	0.67	0.64
Using computing and information technology	0.72	0.63
Gains in Civic and Democratic Development	0.75	
Contributing to the welfare of your community	0.82	
Developing a deepened sense of spirituality	0.69	
Voting in local, state, or national elections	0.50	
Attending campus events and activities	0.12	

Note. The titles of latent constructs are boldface. Cronbach Alpha for each subscale is also boldface

Table 4.32.1

Factor Loadings for Confirmatory Factor Analysis on Student Perception, Satisfaction, and College Environment Scales for Cross Validation Sample of First-Years and Seniors

Scale	First-Year	Senior
Student Perception		
Support for Student Success	0.75	0.80
Providing the support you need to thrive socially	0.73	0.80
Encouraging contact among students from different backgrounds	0.78	0.75
Helping you cope with your non-academic responsibilities	0.65	0.67
Attending campus events and activities	0.55	0.60
Providing the support you need to help you succeed academically	0.65	0.46
Spending significant amount of time studying and on academic work		0.29
Interpersonal Environment	0.77	0.74
Relationships with faculty members	0.83	0.84
Relationships with administrative personnel and offices	0.75	0.73
Relationships with other students	0.67	0.58
Satisfaction		
Student Satisfaction	0.71	0.80
Evaluate your entire educational experience at this institution	0.78	0.87
Evaluate the quality of academic advising you have received	0.65	0.77
Would you go to the same institution you are now attending?	0.71	0.71
Providing the support you need to help you succeed academically		0.30
College Environment		
Academic Expectations ^a	0.70	0.66
Integrating ideas or information from various sources	0.79	0.88
Put together ideas/concepts from different courses	0.25	0.63
Included diverse perspectives in class	0.43	0.57
Used e-mail to communicate with an instructor	0.16	0.41
Prepared two or more drafts	0.49	0.40
Spiritual and Social Expectations	0.44	0.51
Attended an art exhibit, play, dance, music, theater/other performance	0.55	0.50
Participated in activities to enhance your spirituality	0.50	0.49
Exercised or participated in physical fitness activities	0.34	0.52
Learning and Development Expectations	0.74	0.78
Tried to better understand someone else's views	0.77	0.78
Examined the strengths and weaknesses of your own views on a topic or	0.65	0.71
Learned something that changed the way you understand an issue or	0.75	0.72
Discussed ideas from your readings/classes with others outside of class	0.23	

Note. The titles of latent constructs are boldface. Cronbach Alpha for each subscale is also boldface.

^a Academic Expectations become an Engagement Scale for Seniors: Integration and Consolidation of Diverse Ideas.

Table 4.32.2

Goodness of Fit Indices for Cross Validation Sample of First-Year and Senior International Students

	First- Year	90% CI		Senior	90% CI
RMSEA	0.051	0.050	0.053	0.049	0.047 0.050
NFI	0.92			0.92	
CFI	0.96			0.96	
SRMR	0.16			0.15	
PCLOSE	0.07			0.90	

Note. RMSEA = root mean square error of approximation, NFI = normed fit index, CFI = comparative fit index, SRMR = standardized root mean square residual

acceptability, therefore, I conclude that the model was not conclusively confirmed. The senior international students' model had fit indices of RMSEA .047, NFI .92, CFI .96, SRMR .16, PCLOSE .90. Of the 5 indices, 2 indices, RMSEA and CFI, achieved the level of acceptability. Therefore, I conclude that the model was not conclusively confirmed.

The cross validation analysis confirmed the strength of the relationships found in the main research groups. As is seen in Table 4.33, all relationships were confirmed for first-year international students. For senior international students, the strong positive relationships between integration and consolidation of diverse ideas (originally academic expectations) and engagement measures were confirmed: level of academic challenge $r = .67$, active and collaborative learning $r = .96$, enriching educational experiences $r = .50$, and student–faculty interactions $r = .76$. Further, the relationship between gains in practical competence and gains in civic and democratic development was almost perfect with $r = .99$ confirming that the two scales measure more of the same construct and only

1 is necessary in the analysis. Academic expectations had a weak relationship with the college environment scales.

Table 4.33

Correlation of Scales Measuring Engagement, Success, Student Perception, and College Environment for First-Year and Senior International Students Cross Validation Sample

Construct	Correlation				
	LAC	ACL	EEE	SFI	ICI
Engagement					
Level of Academic Challenge	1.00	0.69	0.38	0.59	0.67
Active and Collaborative Learning	0.57	1.00	0.62	0.84	0.96
Enriching Educational Experiences	0.33	0.43	1.00	0.69	0.50
Student-Faculty Interaction	0.51	0.88	0.44	1.00	0.76
Integration and Consolidation of					1.00
Success	GENED	GPSD	GPC	GCDD	
General Education	1.00	0.66	0.93	0.69	
Personal and Social Development	0.72	1.00	0.71	0.99	
Practical Competence	0.92	0.76	1.00	0.78	
Civic and Democratic	0.60	0.88	0.68	1.00	
Student Perception	SSS	IPE	SFT		
Support for Student Success	1.00	0.49	0.53		
Interpersonal Environment	0.57	1.00	0.62		
Satisfaction	0.60	0.52	1.00		
Spiritual and Social Expectations	0.21				
College Environment	ACE	SSE	LOT	CCE	
Academic Expectations	1.00	0.02	0.13	0.02	
Spiritual and Social Expectations	0.14	1.00	0.57	0.15	
Learning and Development	0.42	0.56	1.00	0.11	
Civic and Community Engagement					1.00

Note. ICI is integration and consolidation of diverse ideas scale, originally academic expectations scale. CCE is renamed GCDD.

First-Years at the bottom and Seniors at the top with boldface

Close examination of the results from the cross validation, presented in Table 4.35 to 4.38.1, revealed that only one model completely replicated the original model. One

major explanation is the fact that the cross validation sample was much smaller than the main research groups and predictors may have loss significance due to the decrease in power to detect differences. In predicting student engagement for first-year international

Table 4.34

Estimates for Models Predicting Engagement for First-Year International Students Cross Validation Group

Parameters	Level of Academic Challenge		Active and Collaborative Learning		Enriching Educational Experiences		Student-Faculty Interactions	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.25	0.17	-0.24 **	0.09	-0.08	0.44	-0.21 *	0.11
Level 1 (Student)								
Major			-0.30	0.21	-0.40	0.34		
Father's Graduate Education	-0.06	0.16			0.06	0.13		
Mother's Education:								
Undergraduate			0.09	0.08				
Graduate			0.05	0.11			-0.07	0.12
Enrollment Status					-0.04	0.44		
Student Perception:								
Support for success	0.48 ***	0.11	0.39 ***	0.05	0.29 ***	0.07	0.28 ***	0.08
Interpersonal environment	-0.05	0.09	0.05	0.06			0.16 *	0.07
Satisfaction			0.00	0.06				
Race/Ethnicity:								
Hispanic			0.30 **	0.10				
Black			0.35 *	0.14				
Asian			0.24 **	0.08			0.30 **	0.12
Gender: female	-0.05	0.16						
Level 2 (Institution)								
Academic	0.46 *	0.22	0.60 ***	0.09			0.49 ***	0.13
Spiritual and Social			-0.13	0.12				
Learning and Dev.			0.28 *	0.11	0.05	0.18		
Institutional Types:								
4					0.24	0.13		
5	-0.19	0.21						
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.04	0.20	0.00	0.00	0.00	0.00	0.00	0.00
Level 1								
Intercept/Intercept	0.47	0.68	0.52	0.72	0.54	0.74	0.48	0.69

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.35

Estimates for Models Predicting Engagement for Senior International Students Cross Validation Group

Parameters	Level of Academic		Active and Collaborative		Enriching Educational		Student-Faculty	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.01	0.07	-0.07	0.07	-0.04	0.13	-0.04 *	0.19
Level 1 (Student)								
Age					-0.22 **	0.07		
Transfer					-0.19 *	0.08		
Enrollment Status					0.12	0.10	0.29	0.16
Student Perception:								
Support for success	0.43 ***	0.04	0.55 ***	0.04	0.44 ***	0.04	0.42 ***	0.07
Interpersonal environment							0.18 *	0.08
Race/Ethnicity:								
Hispanic	0.04	0.11	0.22 *	0.10	0.23 *	0.10	-0.02	0.17
Black	0.08	0.13	0.23	0.12	0.27 *	0.12	0.33	0.18
Asian	-0.04	0.09	0.03	0.09	0.23 **	0.08	0.19	0.13
Level 2 (Institution)								
Institutional Types:								
2							0.05	0.11
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.06	0.24	0.00	0.00
Level 1								
Intercept/Intercept	0.77	0.88	0.68	0.82	0.56	0.75	0.61	0.78

(continued)

*Estimates for Models Predicting Engagement for Senior International Students
Cross Validation Group (continued)*

Parameters	Integration and Consolidation of Diverse Ideas	
	Est.	SE
Intercept	-0.06	0.07
Level 1 (Student)		
Student Perception:		
Support for success	0.44 ***	0.05
Race/Ethnicity:		
Hispanic	0.25 *	0.10
Black	0.12	0.13
Level 2 (Institution)		
Learning and Development	0.44 ***	0.10
Random parameters		
Level 2	Var	SD
Intercept/intercept	0.00	0.00
Level 1		
Intercept/Intercept	0.71	0.84

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.36

Estimates for Models Predicting Success for First-Year International Students Cross Validation Group

Parameters	Cumulative GPA		General Education		Personal and Social		Practical Competence	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	3.40 ***	0.09	0.03	0.03	-0.22 ***	0.06	-0.04	0.11
Level 1 (Student)								
Age	0.33	0.17						
Major	-0.83 **	0.25						
Residence	-0.08	0.09						
Student Perception:								
Support for success			0.34 ***	0.04	0.30 ***	0.05	0.70 ***	0.11
Satisfaction	0.02	0.05	0.22 ***	0.04	0.22 ***	0.05	0.15	0.05
Race/Ethnicity:								
Hispanic	-0.28 **	0.09					-0.01	0.16
Black	-0.62 ***	0.13						
Asian					0.25 **	0.08		
Gender - female	0.16	0.09						
Level of Academic Challenge	0.16 **	0.06	0.29 ***	0.04	0.24 ***	0.05	0.32 **	0.05
Active and Collaborative Learning	0.20	0.16						
Enriching Educational Experiences					0.15 **	0.06		
Student-Faculty Interactions	-0.27	0.15	0.05	0.04	0.02	0.06		
Level 2 (Institution)								
Academic Expectations			0.03	0.08			0.29	0.17
Institutional Types:								
6							-0.77	0.23
7							-0.30	0.17
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.02	0.17	0.00	0.00	0.00	0.00
Level 1								
Intercept/Intercept	0.43	0.66	0.40	0.63	0.44	0.66	0.31	0.56

(continued)

*Estimates for Models Predicting Success for First-Year
International Students Cross Validation Group (continued)*

Parameters	Civic and Democratic Development		
	Est.		SE
Fixed effects			
Intercept	-0.18	**	0.06
Level 1 (Student)			
Student Perception:			
Support for success	0.27	***	0.05
Satisfaction	0.15	**	0.05
Race/Ethnicity:			
Asian	0.18	*	0.08
Level of Academic Challenge	0.18	***	0.03
Enriching Educational Experiences	0.18	**	0.06
Student-Faculty Interactions	0.06		0.06
Random parameters			
Level 2	Var		SD
Intercept/intercept	0.03		0.18
Level 1			
Intercept/Intercept	0.39		0.62

Note. Est = estimate, SE = standard error, Var = variance

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

Table 4.37

Estimates for Models Predicting Success for Senior International Students Cross Validation Group

Parameters	Cumulative GPA		General Education		Personal and Social		Practical Competence	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	2.68 ***	0.14	0.01	0.03	-0.18 **	0.06	-0.09	0.05
Level 1 (Student)								
Age								
Father's graduate education	0.04	0.10						
Student Perception:								
Support for success			0.26 ***	0.05	0.50 ***	0.05	0.24 ***	0.05
Interpersonal Environment					0.06	0.05		
Satisfaction			0.34 ***	0.04			0.29 ***	0.04
Race/Ethnicity:								
Hispanic	-0.33 **	0.12			0.16	0.10		
Black	-0.50 ***	0.14					0.29 **	0.10
Asian					0.26 **	0.08	0.10	0.07
Level of Academic Challenge			0.25 ***	0.04			0.24 ***	0.05
Active and Collaborative Learning	0.10	0.05					0.34 ***	0.09
Student-Faculty Interactions			-0.09 *	0.05			-0.28 **	0.08
Integration and Consolidation			0.20 ***	0.05	0.27 ***	0.04		
Level 2 (Institution)								
Institutional Types:								
3	-0.19	0.16						
4	-0.20	0.13						
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.02	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Level 1								
Intercept/Intercept	0.25	0.50	0.46	0.68	0.63	0.80	0.40	0.64

(continued)

*Estimates for Model Predicting Success for Senior International Students
Cross Validation Group (continued)*

Parameters	Civic and Democratic Development		
	Est.	SE	
Fixed effects			
Intercept	-0.29	**	0.09
Level 1 (Student)			
Age			
Student Perception:			
Support for success	0.37	***	0.06
Satisfaction	0.13	**	0.05
Race/Ethnicity:			
Hispanic	0.06		0.10
Asian	0.27	**	0.08
Active and Collaborative Learning	-0.23	*	0.11
Enriching Educational Experiences	0.22	***	0.06
Integration and Consolidation	0.30	***	0.08
Level 2 (Institution)			
Institutional Types:			
2	0.16		0.10
4	0.12		0.09
7	0.16		0.12
Random parameters			
Level 2	Var		SD
Intercept/intercept	0.00		0.00
Level 1			
Intercept/Intercept	0.48		0.69

Note. Est = estimate, SE = standard error, Var = variance component,
* $p < .05$, ** $p < .01$, *** $p < .001$

students, in the model for level of academic challenge, only 2 of 6 predictor variables retained statistical significance. For the model predicting active and collaborative learning, 6 of 12 predictor variables retained statistical significance. In the model predicting enriching educational experiences, only 1 of 6 predictor variables retained

statistical significance. Finally, in the student–faculty interactions’ model, 4 of 5 predictor variables retained significance.

Prediction models for senior international students’ engagement had similar results to the first-year international students. The level of academic challenge model retained 1 of 6 predictors with statistical significance. Active and collaborative learning model retained 2 of 4 predictors with statistical significance. For enriching educational experiences, 6 of 7 predictors retained significance. Student–faculty interactions’ model had only 2 of 7 predictors retaining statistical significance while integration and consolidation of diverse ideas’ model retained 3 of 4 predictors with significance.

When predicting success for first-year international students, the cumulative GPA model retained 4 of 10 predictors with statistical significance. The model predicting gains in general education retained 3 of 5 predictors with significance. For the model predicting gains in personal and social development, 5 of 6 statistically significant predictors were retained. In the model predicting gains in practical competence, 2 of 7 predictors were statistically significant. Finally, the prediction model for gains in civic and democratic development retained 5 of 6 predictors with significance.

For senior international students, one model reproduced when predicting student success: gains in general education. The gains in general education model retained all 5 statistically significant predictors. The model for cumulative GPA retained 2 of 6 predictors with statistical significance. In the model, gains in personal and social development, 3 of 5 predictors with significance were retained. Similarly, gains in practical competence model, retained 6 of 7 predictors with statistical significance.

Finally, the model for gains in civic and democratic development retained 6 of 10 predictors with significance.

In conclusion, I would say that the findings here for the cross validation analysis are preliminary. A retesting of the models with a more representative sample may yield or achieve a better match with main research groups. Representative sample does not mean identical rather it means simply having the sample size that will ensure sufficient power to detect differences. Notwithstanding, where power was not compromise, the evidence from this cross validation analysis suggests that earlier findings regarding the factor structures and the relationship among factors held true.

Summary

In this chapter, I presented findings under four main headings: (a) descriptive analyses, (b) factor analysis, (c) hierarchical linear modeling, and (d) cross validation. Results were presented first for first-year international students followed by results for senior international students. Of all the findings, a direct notable outcome of this study was found in the cross validation section. One of the several models proposed for predicting student engagement and success reproduced for senior international students only while none of the other models reproduced for either first-year or senior international students.

CHAPTER 5

Discussion, Conclusion, Implications and Recommendations

The purpose of this study was to develop a better understanding of US international student engagement and success based on race/ethnicity, gender, and institutional types. Sample data consisted of international students who participated in NSSE 2007. The data were sorted into two groups: first-year ($N=1996$) and senior ($N=2158$) international students. Grouping the data was consistent with findings from previous studies that suggested first-year and senior students were different (Kinzie, Thomas, Palmer, Umbach & Kuh, 2007; Kuh, 2003; 2005; Pascarella & Terenzini, 2005). The study utilized HLM regressions to analyze the data and to address the issues raised by the research questions. In the chapter, I discuss the findings and state conclusions. I then examine implications and, finally, make some recommendations for future studies.

The conceptual model that I proposed (see Figure 1) suggested that student characteristics: age, gender, race/ethnicity, college or university enrollment status, living arrangement, parents' level of education, transfer status, and selection of major are all predictors of engagement and success. Further, these characteristics together with the college environment and student perception of support and interpersonal environment determine student satisfaction and engagement. Student satisfaction as an outcome predicts both student engagement and success. Finally, that there is a reciprocal relationship between engagement and success, that is, each influencing the other.

CFA confirmed several of the postulations within my conceptual framework. Given the importance of these confirmations, I will address them later as part of a much larger discussion on the validity of the engagement benchmarks purported by Kuh

(2001a). Since the foundation of my framework is based on the theory of engagement that identifies level of academic challenge, active and collaborative learning, enriching educational experiences, student–faculty interactions, and supportive campus environment as measures or benchmarks of engagement, I will begin the discussion with the findings that related to those benchmarks.

In a recent special issue of *The Review of Higher Education*, Olivas (2011), Dowd, Sawatzky, and Korn (2011), Porter (2011), and Campbell and Cabrera (2011) challenged the theoretical and conceptual foundations, and more intentionally, the instrument (NSSE) used for measuring student engagement. In their articles, they raised several questions about the validity and reliability of the instrument. Some pointed to the lack of statistical significance for the benchmarks as predictors of critical educational outcomes as well as the low factor loadings of a large number of indicators. Others were more concerned with the design and use of the instrument as a suitable tool for data collection. These and other concerns about the instrument’s suitability for capturing ethnic and racial differences bolstered my decision to include these issues in my study. Following will be a discussion of the extent to which these issues were present or reflected in the current study.

For this study, based on the Goodness of Fit Indices recommended by Marsh et al. (2004), the NSSE model in its original form with the five benchmarks was rejected. Meanwhile, through modification indices, a subsequent model that met the level of acceptability for model fit was achieved. The factor structures for benchmarks were slightly modified but not enough to change the earlier descriptions of the factors. For

first-years, all structures changed except level of academic challenge, while for seniors, only three benchmark structures changed; level of academic challenge and active and collaborative learning remained unchanged.

As I closely examined the models, I observed factor loadings and intercorrelations that Campbell and Cabrera (2011) argued in their study were questionable. Their arguments were based on Kline's (2011) guideline for factor loadings to be greater than .5. In this study, the range of loadings for first-years' level of academic challenge was .15 to .76, active and collaborative learning was .36 to .53, enriching educational experience was .27 to .60, student–faculty interactions was .56 to .71, and supportive campus environment was .38 to .74. For senior international students, factor loadings for level of academic challenge ranged from .19 to .78, active and collaborative learning ranged from .42 to .54, enriching educational experiences ranged from .06 to .55, student–faculty interactions ranged from .54 to .74, and supportive campus environment ranged from .38 to .73. Based on the ranges, it appears that several of the loadings would fall below an acceptable level.

If I applied Kline's (2011) guideline of .5 to interpret Tables 4.6 and 4.7, the result would be as follows, for first-year international students, even after model modification: level of academic challenge would retain 4 of 11 indicators; active and collaborative learning would retain 3 of 8 indicators; enriching educational experiences would retain 3 of 11 indicators; student–faculty interactions would retain all 5 indicators; and supportive campus environment would retain 5 of 9 indicators. When I compared the number of indicators meeting Kline's (2011) guideline in the initial (original) and

modified models, I found a total number of 20 indicators in both cases.

In the case of senior international students, even after model modification: level of academic challenge would retain 4 of 11 indicators; active and collaborative learning would retain 1 of 7 indicators; enriching educational experiences would retain only 3 of the 13 indicators; student–faculty interactions would retain all 5 indicators; and supportive campus environment would retain 6 of 8 indicators. Similarly, when I compared the initial and the modified models for senior international students, I found that only 19 indicators would have been retained in both cases.

These findings were consistent with those found by Campbell and Cabrera (2011) in their study where they identified only 20 indicators meeting the guidelines. Unlike those researchers, however, I support the arguments proffered by McCormick and McClenney (2012) in their response to the special journal issue on student engagement. They argued that the benchmarks were not intended to be latent constructs as assumed in structural equation modeling but were broad indexes or categories of important educational experiences that over time were found to be critical for student success. Inherent in their argument was the notion that statistical significance was secondary to the communicability of the benchmarks among institutional administrators and other users.

Another source of support for the benchmarks in their original compliment was found in the interpretation of the estimates. Since standardized estimates, when squared, represent the amount of variability accounted for in a factor then there was statistical evidence that the indicators explained some degree of variability in the factor (Kline,

2011). For example, an estimate of .37 in fact accounts for 14% of variability in the factor. While 14% is relatively low, it cannot be denied that the indicator explains a portion of the factor without which, accounting for total variability would never be possible. If the solutions are as a result of oblique rotation then the loadings represent contribution to factor and not correlation as explained earlier. With that I wish to report that the estimates in Tables 4.6 and 4.7 for the benchmarks were statistically significant at $p < .001$. Therefore, given the argument by McCormick and McClenney (2012) and the secondary argument from a statistics point of view, I concluded that validity—specifically, content validity—was not compromised by retaining several indicators with low loadings. My position was consistent with NSSE's rationale for identifying the benchmarks (Kuh, 2001) that emphasized the importance of improving the overall student experience on college and university campuses.

On the other side of the same coin, as was mentioned earlier, was the issue of reliability. Given the report in the previous chapter (see Tables 4.6 and 4.7), reliability increased for two benchmarks for first-year international students and three benchmarks for senior international students based on modification indices and the theoretical underpinnings. Based on McMillan's (2008) and George and Mallery's (2003) suggested reliability alpha of .7, the modified models were accepted. These same guidelines were applied to the new scales developed as part of this study to test the propositions made in the conceptual framework. The 14 scales largely exhibited similar patterns across cohorts. Several new scales were developed for the purpose of measuring college environment: academic expectations, spiritual and social expectations, learning

and development expectations, and originally, civic and community engagement expectations which later became gains in civic and democratic development. Following is the discussion about the scales using the earlier guidelines for validity and reliability.

Based on Kline's (2011) guidelines, only the learning and development expectations scale exhibited acceptable factor loadings for both initial and modified models. The other models had varying levels of item retention and were usually fewer than the original number—in some cases—one item remained. In the specific case of the modified senior international student model, none of the factor loadings for the spiritual and social expectations scale achieved the guideline of greater than .5. When examining the reliability, all the scales achieved acceptable alpha based on McMillan (2008) and George and Mallery (2003), except spiritual and social expectations at .48 for first-year (see Table 4.10.1) and .44 for senior international students (see Table 4.11.1). According to Schmitt (1996), low alpha such as .49 may not necessarily compromise the use of the scale if content coverage validity and unidimensionality are present. The use of low alpha was also supported by Bowling (2009) and Hair et al. (1998) arguing that alpha is a function of the length of test and short tests usually result in lower alphas.

The CFA results for the correlation among scales in the model (see Tables 4.12 and 4.13), suggested that each group of scales and more specifically the college environment scales proved to have moderate to strong relationships with each other. In this case, the strength of the correlations was interpreted as the scales measuring very similar construct or related aspects of the same construct based on the theoretical grounding which informed their development. The need to establish relatedness was

important since all three scales were new. Now, I move to a discussion of the results for the proposed conceptual model.

Proposed Conceptual Model

The model consists of 6 key components: student characteristics, student perception, college environment, satisfaction, engagement, and success. Five main propositions along with several subpropositions were tested. Generally, the results from the HLM analyses provided evidence that the 5 main propositions held true. Following are the discussions of those propositions and the evidence to support them.

Student Characteristics

For this study on international students, the single most frequent and consistent highly statistically significant student characteristic predictor of engagement, satisfaction, and success was race/ethnicity. This finding supports the position that international students should not be thought of and treated as a homogenous group with a singular experience. A further finding was that international students who selected a major were more engaged than those who did not, and specifically for seniors, selecting a certain major resulted in higher gains in success. For example, business and professional students tended to have the highest gains in success followed by the social sciences and education students.

Fulltime enrollment had a significant relationship with international student engagement as a whole as well as seniors' academic achievement. According to Kuh et al., (2007) fulltime enrollment facilitates students' involvement in on campus activities that occur both inside and outside of class. For example, fulltime students are able to

participate in learning communities and study abroad programs as well as have greater access to faculty and institutional resources than part time students. These benefits certainly accrue to higher levels of engagement and subsequent higher levels of achievement (Kuh et al., 2005).

Parents' level of education was another important characteristic for engagement and success. Father's level of education proved to be more important for predicting senior international student engagement while mother's level of education predicted first-year engagement and senior student success. Additionally, I found that international students with fathers who hold graduate degrees were more engaged than other students. For international students, I believe higher levels of engagement, specifically, level of academic challenge, are as a result of culturally different reasons than those common to US students (Anderson et al., 2009). For example, international students tend to exhibit high internal locus of control driven by high self-efficacy which was obviously developed previously in their home countries (Anderson et al., 2009). This locus of control might be the reason for higher levels of engagement.

Age was the only other characteristic that had widespread—both first-year and senior—predictive value for engagement, satisfaction, and success. Senior international student age predicted their levels of engagement and satisfaction while for first-year, age predicted their success, specifically, GPA and gains in general education and practical competence. Further, there were differences for traditional versus nontraditional age students. It appears that nontraditional age international students had lower levels of engagement but greater success than traditional age international students. On one hand,

traditional age students are expected to have more time and access to on-campus activities resulting in higher levels of engagement (Kuh et al., 2007). On the other hand, nontraditional age students are more mature, responsible, and focused. These qualities are usually associated with personal growth and development hence these students are expected to report greater success. In conclusion, the findings related to age are at least consistent with expectations.

According to Kuh et al. (2007), females are generally more engaged than males and tend to report greater gains in academic achievements, general education, and quantitative skills. In this study, I found that this claim was less often true for international students except in the case of GPA where females in fact reported a higher grade. Senior female students, however, were more engaged than males in the integration and consolidation of diverse ideas. First-year females were less engaged in enriching educational experiences. This lower level of engagement may be indicative of the oppressive mindset that some females are still combating. By that I mean, although they are in a less restrictive society, they appear to be culturally bound to specific kinds of behaviors and involvement. Therefore, research done in this area could prove useful by illuminating the dynamics at work within international female college students.

Student Perception

From the institutional perspective, I believe there are several results that institutional leaders may find instructive. An example of one such result is where I found student perception to be essential in predicting international student engagement, satisfaction, and success. With the exception of first-year GPA, student perception of the

support for success was a highly statistically significant predictor for all three outcomes. Students' perceptions of the campus interpersonal environment predicted all measures of engagement except for first-years' engagement in enriching educational experiences. The same was also a predictor for success and satisfaction with the exception of senior students' gains in personal and social, and civic and democratic development. These students' perceptions are formed largely through the encounters they have on campus. These encounters, according to Anderson et al. (2009) and Kuh et al. (2007) should be purposeful and intentional as they provide the opportunities for students to interact and to experience personal growth.

Given that most of the encounters that influence students' perceptions of campus culture and environment are nonacademic, institutions—through their student affairs staff—need to focus on helping international students increase their levels of participation in more enriching educational experiences. Tables 4.4 and 4.5 indicate that this was the only measure of engagement for which US domestic students outperformed international students. What is currently known about the racial/ethnic composition of international students on US campuses is that the majority of these students are of Asian descent. Asian students are from cultures that are more conservative than the US, which may well contribute to the culture shock these students experienced upon arrival (McKinlay et al., 1996; Zhao et al., 2005). To ease the stress and tension experienced by these students, the institution must consider how to create better pathways to these meaningful and educationally rich experiences.

Another role for the institution is to communicate and interact well with

international students. Given that a large number of international students is also English as Second Language (ESL) speakers then the institution—administration, faculty, and student affairs staff—should collaboratively work at improving their communication and interpersonal skills relative to these students. For example, if a faculty member continuously speaks at a rapid rate and uses unfamiliar vocabulary, especially, culture-specific vocabulary then ESL speakers are more likely to feel isolated and frustrated with the classroom experience. They are also more likely to avoid engagement in the classroom and all types of interactions with faculty. Therefore, communication or interactions, direct and indirect as well as written, oral or nonverbal, should aim at being reaffirming and supportive. Additionally, the message should always be simple and precise to avoid misunderstandings and confusion.

College Environment

The following discussion of college environment dovetails nicely with the arguments made for student perception. For this study, college environment measures were institutional types, control, institutions' academic, spiritual and social, and learning and development expectations. Institutional types predicted engagement, success, and satisfaction. Only three (3) measures of engagement were predicted: level of academic challenge for both first-years and seniors, active and collaborative learning for seniors, and student-faculty interactions for seniors. Success also had three measures predicted: gains in general education, gains in practical competence, and gains in civic and democratic development. Satisfaction was predicted for both first-years and seniors.

Institutional control only predicted satisfaction for seniors. The institution's

academic expectations predicted three measures of engagement for first-years only: level of academic challenge, active and collaborative learning, and student–faculty interactions; and all measures of success for both cohorts except GPA. The spiritual and social expectations of the institution predicted level of academic challenge, active and collaborative learning, and student–faculty interactions for both first-years and seniors and integration and consolidation of diverse ideas for seniors. It also predicted gains in general education for both first-years and seniors, gains in personal and social development and satisfaction for first-years, and GPA for seniors only. Like spiritual and social expectations, learning and development expectations predicted in a similar manner engagement with the exception of also predicting enriching educational experiences for first-years. For success, the prediction was similar to spiritual and social expectations with the exception of predicting gains in practical competence for seniors but did not predict gains in general education for first-years.

The results clearly show differences in engagement, success, and satisfaction for international students based on the type of institution they attend. This finding in regards to engagement appears more often true for seniors than for first-years. The differences for success and satisfaction, however, tend to hold true for first-years and seniors. According to Siaya and Hayward (2003), as highlighted earlier in Chapter 1, research universities are the institutions more likely to have fully dedicated staff and systems to support international students. The expectations, therefore, are for higher levels of engagement, satisfaction, and success for international students in these types of institutions when compared to others. It was also reported that comprehensive

institutions are the least likely to have a high density of international students on their campuses and the least likely to support with institutional scholarships. Liberal arts institutions are the least equipped to support international students systemically but are committed to the recruitment and financial support of these students. Based on the report, my expectation is that there will be no difference in international students' engagement for comprehensive and liberal arts institutions and that the level of satisfaction should be lowest for comprehensive than all other types of institutions. Later, I will discuss the findings of those analyses.

Academic, spiritual and social, and learning and development expectations are those elements that are a part of the campus environment. According to Pascarella and Terenzini (2005), the campus environment is directly related to students' social and academic participation. Additionally, the rules and clearly communicated expectations help to establish a campus environment that is supportive of all groups of students. In this study, there was much evidence to support those arguments. In the models, these three variables predicated student engagement as well as success. To get a better and deeper sense of the output of the model, I will focus on the research questions to highlight the specific findings and knowledge gained from the results.

Research Question 1

How does international student engagement in different types of institutions vary based on race/ethnicity and gender?

The general pattern of engagement across institutional types based on race/ethnicity and gender suggests that race/ethnicity more than gender is an important

aspect of the international student and how they participate and experience US higher education. This finding remained true even after considering the intersectionality of race/ethnicity and gender. I found that very high research universities tend to see greater differences among racial/ethnic groups of international students than any other institutional type. This finding was consistent with literature (Kuh et al., 2007).

Senior Hispanic students tend to exhibit differences on more measures of engagement than any other racial/ethnic group. First-year Hispanic, Black, and Asian international students all appear to be more engaged than White international students in enriching educational experiences. No reason was illuminated in this study as an explanation for this specific observed phenomenon. From the results, however, it was clear that this finding was not common when studied based on institutional types but was in fact true when studied based on race/ethnicity. Also, notably true was that this phenomenon appears to be unique to this study because this was not observed in the studies by Zhao et al. (2005) and Irungu (2010) on international students. Black international students also reported differences across institutional types. Finally, no racial/ethnic difference was found for master's colleges and universities and baccalaureate colleges in diverse fields.

Asian international students tend to be different from White international students across institutional types. For example, in baccalaureate colleges in diverse fields, first-year Asian international students differed on active and collaborative learning and enriching educational experiences from White international students. In master's colleges and universities with smaller programs, first-year Asian students differed again

on enriching educational experiences. Previous studies have also found differences between Asian and White international students in enriching educational experiences (Irungu, 2010; Zhao et al., 2005). More often than not, White international students were found to be more engaged than Asians. The traditional reasons given for those differences are usually from a socio-cultural perspective where Asians are described as coming from more conservative and restrictive backgrounds and so might not break free into the American academic experience (Anderson et al., 2009).

Gender was significant across three types of institutions: high research universities, master's colleges and universities with larger programs, and smaller programs. Female senior international students in master's colleges and universities were more engaged than males in level of academic challenge, active and collaborative learning, and integration and consolidation of diverse ideas. Also, first-year female international students in high research universities were more engaged than males in enriching educational experiences. In master's colleges and universities with smaller programs, again first-year female international students were more engaged in enriching educational experiences than males.

According to Kuh et al. (2007), female students are more engaged than male students. For international students in this study, that finding did not replicate for all measures of engagement. Generally, I found first-year female international students to be more engaged in enriching educational experiences and student–faculty interactions. For seniors, I found female students to be more engaged in integration and consolidation of diverse ideas. These findings on general differences and more specifically those present

with institutional type share a loose connection with the findings of Irungu (2010). For example, in that study, female international students were found to have engaged more in enriching educational experiences while male international students were engaged more in active and collaborative learning.

The findings relating to female international students seem to provide, at least partially, some information about the change in behavior of females from traditionally more conservative societies. Females from Asian societies are usually excluded and restricted in the kinds of activities and opportunities in which they can engage. Engaging in educationally enriched experiences suggests that they are involved in co-curricular activities, for example, participating in learning communities and community service projects, and so on. This kind of behavior combined with a shift from passive learning to more active and collaborative learning may provide some explanation for why Zhao et al. (2005) found that senior international students were more like US students in respect of their time spent in relaxation and socialization (evidently, they acculturate).

Research Question 2

To what extent is there a relationship between engagement and success among international students across racial or ethnic groups?

Based on the results of the conceptual model testing (see Tables 4.19 and 4.20) with regards to the reciprocal relationship between engagement and success, I concluded that there was such a relationship. The goal here was to determine if this relationship was mediated by race/ethnicity.

Based on the results, it was clear that for some racial/ethnic groups, the

relationship between engagement and success was different. In the case of engagement predicting success, Black and Hispanic senior international students were the only 2 racial/ethnic groups that exhibited differences in success based on engagement relative to White international students. The observed differences were positive for both groups except in the case of first-year Hispanic international student where there was a negative relationship. In contrast, when success predicted engagement, first-year Black and Asian international students had lower scores than White international students for active and collaborative learning, enriching educational experiences, and student–faculty interactions. Senior Asian international students’ scores for enriching educational experiences were higher than White international students in relation to gains in personal and social development.

The finding regarding the relationship between first-year Hispanic international students’ engagement in enriching educational experiences and GPA was consistent with suggestions in the literature about international student behavior relative to academics. Zhao et al. (2005) intimated that international students compensate for feelings of isolation and loneliness on campus by redirecting their efforts towards academics. The specific finding somewhat corroborated this kind of reasoning when the results indicated that first-year Hispanic international students’ engagement in enriching educational experiences lowered GPA relative to White students. One may deduced that for Hispanic students becoming more integrated into the life and activities of college will lead to lower academic achievement, all other variables remaining constant.

This conclusion must be contrasted with the results from the flip–side analysis

where GPA was the predictor of engagement for first-year Hispanic international students. The results from that analysis suggested that higher GPA was associated with lower levels of engagement in active and collaborative learning, enriching educational experiences, and student–faculty interactions. These findings were in direct conflict with the theory of engagement where according to Kuh (2001 a), greater levels of engagement results in greater success. It is, however, noteworthy that for senior Hispanic international students, engagement in enriching educational experiences was associated with higher gains in general education than White international students.

Research Question 3

To what extent do institutional factors have a differential relationship with student success for each racial/ethnic group of international students?

Based on HLM results, there was evidence that the relationships between institutional factors and success vary by race/ethnicity. In this study, specifically, racial/ethnic differences were observed for the relationships between student success and the following institutional factors: institutional types, institutional control, and the institution’s academic, and spiritual and social expectations. More specifically, senior international students exhibited differentials by race/ethnicity in the relationships between institutional control and 2 of 5 measures of student success: gains in personal and social development, and gains in civic and democratic development. First-year international students exhibited differentials by race/ethnicity in the relationships between academic expectations and 2 of 5 measures of student success: gains in personal and social development, and gains in civic and democratic development. First-year Asian

international students were the only racial/ethnic group that exhibited differences for spiritual and social expectations.

Most of the observed racial/ethnic differences for institutional types were concentrated in three main types: very high research university, master's colleges and universities with smaller programs, and baccalaureate colleges in Arts and Sciences. Generally, senior Asian international students—to a lesser extent, first-year—exhibited more frequent differences with White international students on success than any other racial/ethnic group. Hispanic international students—both first-years and seniors—were the next group that exhibited frequent differences in success than White international students. First-year Black international student, however, was the only racial/ethnic group that had a lower performance than White students on any measure of success, which was the case for GPA.

The findings regarding the effect of institutional control on student success was consistent with results reported by Pascarella and Terenzini (2005). Private colleges and universities consistently had higher rates of success as measured by degree completion than public colleges and universities. I found that Hispanic, Black, and Asian international students in private colleges and universities were more like White international students in their achievement of success except for senior Hispanic and Black international students on gains in personal and social development, and senior Hispanic international students on gains in civic and democratic development where they outperformed White students.

Academic expectations, spiritual and social expectations, and learning and

development expectations all measured different aspects of the college environment. Earlier in this study, I reported that spiritual and social expectations and learning and development expectations were predictors of varied measures of students' success. In this section, I found that Hispanic and Asian international students exhibited higher scores than White international students for at least 1 of 5 measures of success. This result suggested that there were not many differences among the racial/ethnic groups; therefore, the influence of the social and academic college environment on success was common or similar across the groups. Additionally, this finding reconfirms the influence of a positive college environment on student success as reported by Pascarella and Terenzini (2005), specifically in the areas of cognitive and intellectual growth.

Research Question 4

To what extent do engagement and satisfaction predict international student success across institutional types for each racial or ethnic group?

The emphasis of the exploration in this section was to determine whether or not engagement and satisfaction varied by racial/ethnic composition when predicting success. The results suggested that there were in fact variations by race/ethnicity and that from one institution to the next, the prediction pattern changed. From an observation of the pattern, it appeared that first-years were demonstrating different patterns than seniors. For example, the variation in satisfaction as a predictor of success occurred almost exclusively for first-year international students, except for 3 instances where senior students also experienced some differences, that is, in the case of very higher research universities, master's colleges and universities with larger programs, and baccalaureate

colleges in diverse fields.

While satisfaction has been touted as an important variable in understanding student overall experience in college (Kuh et al., 2007), the literature remains somewhat silent about its impact on student success for different groups of students. In this study, I found that satisfaction predicted more frequently Black international students' GPA than any other racial/ethnic group when compared with White international students. The results also suggested that active and collaborative learning within master's colleges and universities with larger and smaller programs differed by race/ethnicity than for other types of institutions. This outcome appeared to be intuitive given that students who participated more in those kinds of activities developed their cognitive and intellectual skills and ultimately were more successful in other areas (Pascarella & Terenzini, 2005).

Student–faculty interactions predicted different measures of success for Hispanic and Asian students in master's colleges and universities with larger and smaller programs. Both groups of students would be classified as ESL speakers which tend to create some challenges for those students to freely communicate and interact with faculty as well as peers. According to Anderson et al., (2009), those students do experience difficulties interacting with faculty in ways comparable to US domestic students. This issue is exacerbated for first-years than seniors because seniors would have somewhat acculturated to the academic experience in the US classrooms.

The final area from the results to highlight is enriching educational experiences. Throughout this study, Asian international students repeatedly showed favorably on this measure of engagement. Again, this finding somewhat deviated from the extant literature

that suggested that Asian international students in particular channel most of their energies towards academics as a means of compensating for other sociocultural needs that they are unable to meet (Anderson et al., 2009; Zhao et al., 2005). It is noteworthy that in doctoral research universities, enriching educational experiences predicted 4 of 5 measures of success for first-year Asian international students.

Conclusions

This study sought to compare international students' engagement and success across institutional types based on race/ethnicity and gender. Following are the main conclusions drawn based on the results of the study. I will present information under the following headings: student engagement, student success, and satisfaction.

Student Engagement

International students in this study were more engaged in educationally meaningful activities as defined by Kuh (2001a) than the general NSSE population. This fact held true for both first-years and seniors (see Tables 4.4 and 4.5). Another major conclusion is that international students engaged differently based on their race/ethnicity. This is an important point to make because this study aimed at assessing the extent to which differences by race/ethnicity were in fact true differences. US institutions serving international students must be mindful of this finding. In order to ensure satisfaction by all international students, institutions must cater separately and collectively to the different subgroups of international students.

For this study, gender did not emerge as a major distinguishing aspect of the international student experience. Gender did, however, present minor differences in the

areas of enriching educational experiences and student–faculty interactions for first-years, and integration and consolidation of diverse ideas for seniors. When engagement was examined by gender across institutional types, I observed differences in level of academic challenge, active and collaborative learning, and integration and consolidation of diverse ideas in master’s colleges and universities with larger programs. Evidently, male international students engaged more than females in learning communities, freshman year programs, interacting with individuals from a different racial background, and interacting often with faculty.

Generally, engagement and success appear to influence the other such that students who are engaged are more successful and those who are successful become even more engaged. However, some measures of success and some measures of engagement have negative relationships for specific racial/ethnic groups. To better understand this complex phenomenon, more research needs to be conducted in order to determine the true direction of the engagement–success conundrum.

International students’ level of academic challenge is a strong single independent indicator of overall success. In fact, for Black international students’ level of academic challenge was the most telling about their success when compared to White international students. This knowledge is useful for faculty as well as other student affairs personnel as they seek to improve or enhance the academic experience and satisfaction of international students.

On an institutional level, the three main types of institutions that appear to hold differential experiences for racial/ethnic groups were: very high research institutions,

master's colleges and universities, and baccalaureate colleges in Arts and Sciences.

Although Pascarella and Terenzini (2005) reported that studying between-college effect using institutional types was not a very useful framework because of the confounding nature of the variable. I attempted to correct for that by controlling for institutional control. The differences were still observable, hence are noteworthy.

The 3 types of institutions match 3 of the categories identified and discussed in the study by Siaya and Hayward (2003). From the list, the type of institutions that I expect to offer the least support for international students is master's colleges and universities with smaller programs. It is important to note that although this is true, this type of institutions would be the best of that category (comprehensive) and so would not offer the worst overall experience. The effect of institutional control was mostly muted for this study until I examined the interactions between race/ethnicity and institutional factors. At that point, I observed difference based on institutional control.

Student Success

Success is a positive predictor of engagement, but not for all racial/ethnic groups. In fact, the relationships between GPA, gains in general education, and gains in practical competence on the one hand and active and collaborative learning, enriching educational experiences, and student-faculty interactions on the other hand have differential outcomes for Hispanic, Black, and occasionally Asian international students (see Table 4.23). Generally, more positive outcomes are associated with the relationship between institutional factors and success for different racial/ethnic groups. International students tend to report high levels of success. What is uncertain is the cause of success.

International students, mainly those from Asian countries, tend to be driven by the desire to succeed and the prestige of attendance at a US university (Tan, 1994). This external pressure tends to keep international students, especially Asian students, quite focused on the goals of success and completion. It is not very clear from this study whether the report of such high levels of success truly is as a result of engagement or even satisfaction. Identifying the true cause of success was beyond the scope of this study design, hence I report that the findings in regards to the true cause of success for international students remains inconclusive.

Satisfaction

Satisfaction is a highly significant predictor of first-year engagement but engagement is not a predictor of international students' satisfaction. This finding suggests that student satisfaction is not a result of student engagement. International students might merely participate or become involved simply because the institution has requirements for certain activities—especially true of first-year. However, it appears that the more satisfied first-year international students were, they were also as engaged. This conclusion is consistent with reports from Astin (1993).

International students' satisfaction predicted every measure of success for both first-year and senior. Therefore, I am confident that satisfaction is a true predictor of international students' GPA, gains in general education, gains in personal and social development, gains in practical competence, and gain in civic and democratic development. I am confident that satisfaction is a predictor of first-year's engagement: level of academic challenge, active and collaborative learning, enriching educational

experiences and student–faculty interactions.

Implications of Research Findings

International students' satisfaction predicted their engagement and success. It appears that these students achieve satisfaction from factors external to the college environment or an intrinsic desire that is achieved or fulfilled by simply participating in US higher education. This satisfaction may well be fostered in a community of other international students rather than from direct involvement in on campus activities. Plausibly, there is interplay between level of satisfaction and the number of international students on a campus. These speculations find support in the previous study by Zhao et al., (2005) on density of international students on campus.

According to Zhao et al. (2005), density of international students on a campus was linked to students' positive views of the overall quality of their experience. In other words, they found a relationship between the number of international student on a campus and satisfaction with overall experience. In light of the current and previous findings on international student satisfaction, US institutions should seek to increase the presence of international students on campus.

For this increase to happen, institutions should secure funding as part of a scholarship program that awards to international students as priority. Additionally, institutions must assign a designated space and personnel to facilitate the many questions and address the concerns of international students. Further, as part of the overall programs geared towards students, especially for first-year students, there should be a

specially designed program for international students where they are able to receive direct instructions on studying in the US.

One of the overarching findings from this study is the fact that there are differences in engagement as well as success patterns for each racial/ethnic group. Again, this finding confirms what was already known from Zhao et al. (2005) and Irungu (2010). The unique contribution of this study is that the differences by race/ethnicity vary across types of institutions. The results of the between-college effects, suggest among other things that international students at very high research universities, master's colleges and universities with smaller programs, and baccalaureate colleges in Arts and Sciences exhibit persistent racial/ethnic differences. Several steps therefore need to be taken to improve or bolster the way these institutions respond to these students.

As a first step, institutions should assess their current statuses relative to facilitating international students to determine the quality of services and the level of support provided international students. Second, institutions should design specific or retrofit already existing program(s) or structures so that they are sufficiently flexible to respond to the varied needs of these students. Based on the report from Siaya and Hayward (2003), very high research universities seem most poised to immediately implement or simply modify their current systems to address individual racial/ethnic groups. Master's colleges and universities, may need to do some shifting in mindsets and orientations in order to boost funding and other resources. For example, the institutions could begin by employing dedicated staff to exclusively work with international students. The goal should be to have trained qualified staff who are fully aware of the purposes and

goals of internationalization, the demands of DHS for foreign students studying in the US, and the benefits of international students on campus to the institution, state, and the entire US. Liberal arts colleges may simply need innovative ideas about accessing funds in order to support international students.

Third step is to actively recruit and maintain students from foreign countries. To accomplish step three, institutions need to establish an office with chief responsibility to organize for international students. As part of this operation, the office should engage in identifying potential students around the world and seek to bring them to campus. Through the other services provided by the office, students should be supported to the point of degree completion.

With unique patterns of engagement for different racial/ethnic groups, institutions must appeal to all groups equally. Perhaps, the use of themed-housing or learning communities for individual racial/ethnic groups could be one aspect of a holistic approach to the integration of international students into the college environment (Pascarella & Terenzini, 2005). Another aspect could be to engage international students in activities that allow for the intermingling of racial/ethnic groups in order to facilitate diversity-related experiences. One feature of these activities could be where international students are fully involved in mutual exchange with US domestic students. According to Siaya and Hayward (2003), those kinds of interactions are necessary and consistent with the goals of internationalization of US higher education. All students—domestic and international—benefit from diversity-related interactions, that is, in

academic achievement, development of cognitive and intellectual skills, and acquisition of general knowledge (Pascarella & Terenzini, 2005, 1991; Kuh et al., 2007).

The findings of this study confirmed the reciprocal nature of the relationship between engagement and success but were inconclusive about the true effect of one on the other. The preliminary understanding at this point, based on the evidence, is that engagement has a positive relationship with success but success appears to have a negative relationship with some measures of engagement. That point is at least true for Asian international students, and Hispanic and Black in one instance. What this means for student affairs practitioners and faculty is that they should focus time, energy, and resources on motivating international students to become more engaged in classrooms and other educationally meaningful activities because doing so will lead to success during college and beyond.

The proposed model in this study captured well the major components discussed in the literature with respect to students' engagement and success. For international students in particular, their journey through undergraduate education is somewhat different from US domestic students. The several levels of model testing—CFA and HLM—provide the statistical evidence to support the model's use with this particular subpopulation of college students. The model should therefore become the beginning point for major theory development relative to international students' and their unique experience in US higher education. The next step in the process of theory building, should be to fine tune the model through further testing with specific groups of international students, that is, different cohorts, different racial/ethnic groups, and other

subgroups of international students, for example, country of citizenship and specific religious groups. Given the spectrum of diversity represented in the international student body, I anticipate seeing the model tweaked or changed to meet unique characteristics of specific groups.

Limitations of Study

This study has several limitations that will affect the extent to which the findings can be generalized to the populations of students and institutions. These limitations are (a) the date of data collection, (b) the exclusion of some institutional variables of importance to this study, (c) the role racial/ethnic categorizations play in the United States' systems, (d) the use of self-report to assess student success, and (e) the increase in the likelihood of statistical significant findings as a result of multiple testing.

First is the limitation based on the date of the data. NSSE's policy is to withhold public access to dataset until four years after the administration of the survey. Given that policy and the time of negotiation with NSSE, the most current available data was 2007. The findings and recommendations from these data may be less useful to institutions that more recently modified or improved their resources and operations based on more current administrations of the survey. However, for institutions that are similar or are facing current realities to those presented in this study, these recommendations should prove useful.

Second is the exclusion of institutional variables from the NSSE data accessible for this study. A few examples of these institutional variables are the mission, selectivity based on Barron's Selectivity Profile, size, and location. Based on the conceptual

framework, these variables would be needed for the analysis but are not included the data at this time because of other constraints stipulated in the agreement with NSSE that protects the identity of both students and institutions. Suitable proxies were applied whenever available in the NSSE data so that some representations of the variables were in fact included in the analyses.

Third limitation is the racial or ethnic categorization used in the United States. The racial/ethnic classifications are primarily a United States' phenomenon and do not necessarily align with the way international students usually describe or self-identify in their own country. Unfortunately, to comply with the United States institutions and agencies' practices, these students are forced to adapt to this way of thinking relative to their identities. Consequently, the way in which international students are grouped for this study may be less meaningful, thus restricting the strategies and recommendations that could truly impact change for students from different countries as they study in the United States.

It is important to note here that there are greater complexities associated with international students using the US categorizations of race/ethnicity than was suggested above. For example, Blacks from the Caribbean are different in many respects from Blacks in Latin American and are different from Blacks from Africa. The journeys and experiences that led to them converging at a US college or university may be so varied that an attempt to treat them as though they are similar may result in frustration leading to greater disengagement.

A similar concern exists for Asians. Consider Chinese Asians from China compared to Indian Asians from India; everything from language to life style and religious practices is so vastly different. Grouping these students in a living–learning community, for example, blindly assuming that their ways of life would be supportive of each other, could easily create a tense and hostile environment as well as greater isolation for all. Knowledge of differences within categories becomes a major guide for those who serve international students. When grouped in ways suggested by the US systems, the real goals of student engagement become more difficult to be actualized for each group and may result in students further disconnect.

An acknowledgement of these differences helps faculty and student affairs staff to quickly see that these categorizations are largely artificial and less meaningful in communicating similarities or differences for international students. Therefore, when considering some of the findings of this study, further thought must be given to the unique composition of the international student population on a campus to determine the extent of their relevance. I also recommend that the personal data provided on application forms by international students, for example, country of origin or citizenship, be used for categorization rather than their identification of race/ethnicity. The use of “country of citizenship” categorization on application forms tends to be more universal and make more sense in a global context.

With regards to the usefulness of these research findings, institutions should consider how these findings may be applicable or not applicable to specific subgroups of racial/ethnic categories. It becomes incumbent, therefore, upon those who work with

international students to be flexible in their use of the findings such that as it becomes necessary to expand or discard some or all of the current findings in the context of new and more relevant research, that they will do so with confidence. Most importantly, institutions should remain committed to better their understandings of the students they serve so that at all times, they are serving the individual student over and above the student's category or group.

Fourth is the use of students' self-reports to measure success. As mentioned in earlier discussions, Kuh et al. (2001) identify two major challenges associated with self-reports as a tendency by students to provide inaccurate information, and an unwillingness to provide accurate information. These challenges are usually manifested in inaccurate estimates of time usage and an overstatement of their performance (halo effect). Further, Bowman (2010) reported mixed findings for the relationship between self-reported and other longitudinal gains when using regression analyses but small to zero relationship when using correlations. These results largely underscore the need to be cautious about the kinds of conclusions drawn and the extent to which the findings can be generalized.

In a follow-up study where Bowman (2011) examined the validity of self-reported gains at diverse institutions, he found support for more accurate self-reporting of college outcomes at some institutional types. He noted, however, that there was no evidence to support the use of self-report as a proxy for longitudinal gains. Given that this study includes institutional types as a predictor of success in the regression analyses, the findings based on institutional types may well be embraced with greater confidence over those that are only based on a general look at institutions.

The final limitation is related to statistical significance due to chance because of multiple testing. According to Utts and Heckard (2006), multiple testing is where there are many simultaneous hypothesis tests and only a small number of results is statistically significant. The goal of statistical testing is to determine whether observations occurred by chance. In a typical hypothesis test, the aim is to reduce the probability of a type I or type II error (Utts & Heckard, 2006). Multiple testing on the same data, unfortunately, increases the likelihood of statistical significance due to chance alone. In essence, this means that we are increasing the probability of a type I error and to a lesser extent, type II error. “If one does not take the issue of multiplicity of tests into account, then the probability that some of the true null hypotheses are rejected by chance alone may be unduly large” (Ramano, Shaikh, & Wolf, 2010, p. 2).

In the current study, based on the sheer numbers of statistical tests done, it is likely that some of the statistical significance observed for the alternative hypotheses were due to chance. Therefore, these findings should be treated with caution whenever applied to other groups of international students. This limitation, however, validates the decision to include a cross validation study in this research. More stringent statistical procedures, for example, false discovery rate (*FDR*), could have been applied to address this concern with greater sophistication but were reserved for future studies.

Recommendations for Future Studies

Throughout this discussion and earlier chapters, I recommended areas for future studies. To be more definitive, I will highlight those areas I believe are immediate and need attention. Generally, the research community has only just begun to accumulate

research on international students and their experiences in the US. The focus over time has been on their psychological wellbeing (Pederson, 1991). Many aspects of their experiences and lives are still uncovered. For example, how are identities established and maintained while in the US, what are their motivations, how effective are their survival mechanisms, how do they build community, and establish new lives in a foreign country? Therefore, the ensuing discussion will focus on what might be my research agenda for the next several years.

International students largely remain an untapped resource in US higher education (Pederson, 1991). Most of their involvement in- and outside-of-classroom are limited to and restricted by the prescriptions written for them under the hand of university personnel as well as US domestic students, especially in group work settings where they tend to dictate the ways international students can become involved (Anderson et al., 2009). Future studies could attempt to understand how experiences such as these inhibit or enable international students' engagement and success. Further, researchers could seek to understand the mechanisms used by international students to navigate or overcome challenges of this nature in order to become successful.

In this study and others, engagement tends to be defined from a North American perspective where higher education is practiced in a particular manner. Researchers could seek to discover how the concept of engagement would be framed by different groups of international students and how their experiences from their perspectives would help them function in a global society. A different but related issue is that most of the areas explored in research approach international students from a deficit model where

they are the recipients of some experience. The current focus of research needs to shift to the international students' perspective and examine their contributions and their influences on the shaping and molding of US higher education.

This study did not attempt to address all the dynamics of the different kinds of interactions international students' encounter in- and out-of-the-classroom and their impact on engagement and success. An example of those kinds of interactions is a scenario where international students feel that professors extensively use culture-specific jargons and examples in their delivery of course content. Another scenario would be where international students are expected to disregard or modify their previously learned knowledge in order to do well in a US higher education system. For example, an undergraduate, who suffers grade discrimination because of his or her use of UK English spelling versus US English spelling in term papers. A study of the extent to which these and other kinds of experiences-racism-are encountered and their impact on international students' (diverse groups) engagement and success could lead to far richer findings.

Another important area which was not addressed by this study is the way that international students describe engagement, satisfaction, and success from the perspective of personal sacrifice. International students, like some other subpopulations of students, make sacrifices in order to attain a degree in the US. Unlike other subpopulations of students, they perceive a level of personal sacrifice that is tied to their self-image and their reputation, especially their academic reputation. Given the adjustment challenges that these students encounter when they initially enroll in a US institution, and in some cases beyond, they may or may not experience success to the degree to which they did

prior to coming to the US. Those in the US system, both students and faculty, do not usually regard or even respect these students' academic achievement or experiences in ways that are comparable to those in their home country. Consequently, many of these students suffer the loss of a "stardom status" to which they had grown accustomed. It may also be that for other international students, they gain more academic success than they did prior to their time in a US institution, in which case, this success may create such a status in their home country. Therefore, research should examine the role of these students' perceptions of derived benefits from the attainment of a US degree compared to their level of personal sacrifice when describing their engagement, satisfaction, and success. Some related questions are; if the loss or gains persist to senior year, and if it so, does it change at any time, and how does it change?

To answer these questions and to undertake further studies that will result in more detailed understandings of international students, particularly at the individual and institutional levels, I recommend research designs that involve mixed methods. Mixed methods offer a better opportunity at capturing breadth and depth of an issue (Cresswell, 2009). Researchers are able to further interrogate ideas that emerge in quantitative studies, where the "what" of an issue gets defined, through qualitative studies where the why and importance are explained.

Given my thoughts and experience with international students and as an international student, in this study, I wanted to have explored further how different racial/ethnic groups actually defined satisfaction. Also, I wanted to determine the reason for first-years and seniors to have reported similar levels of satisfaction. Finally, I

desired to better understand what each cohort (first-year and senior) considered in terms of their experiences at their institutions as they reported satisfaction and to determine if those aspects were similar and why. These questions would have been more likely addressed if I had included either focus group or interview sessions where international students would have been given the opportunity to explain in their own words their actual experiences.

Finally, as institutions move forward to further study international students as well as develop resources for them, I recommend as a set of next steps:

1. The use of a campus specific instrument that focuses on institutional realities that gets at what is true for that campus. It would be helpful to begin with NSSE or any other related college student experience instrument as a framework or as a guide to areas to explore in designing instruments.
2. Define international students beyond racial/ethnic categorizations so that the study will report findings that are more specific to those groups.
3. Include lots of opportunities that give place to the different voices of international students. This step would go a far way in helping institutions better understand the individuals on their specific campuses and lead to more tailor-made solutions for them.
4. Align institutional resources to the findings, such that, international students like all other students, are treated first as individuals and second as part of a larger community that includes several with shared or common characteristics

(other international students that are like them) and others with a host of diverse characteristics.

In conclusion, it is important to say that the goal of any study, in this case, the study of international in the US, should not be to identify “cookie-cutter” or one-size-fit-all strategies. A more realistic goal might be to broaden or expand current understandings so that strategies chosen match the unique needs on a specific campus. Multi-institutional studies, such as this study, should only serve to explore trends and patterns that are common and establish a basis for certain types of recommendations. Institutions should therefore use findings to help them shape their own research agenda as they seek solutions to more specific challenges.

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Appendix A

Carnegie Classification of Institutions of Higher Education

Basic Classification 2005

Doctorate-granting Universities.

This category includes institutions that award at least 20 research doctoral degrees during the update year (excluding doctoral-level degrees that qualify recipients for entry into professional practice, such as the JD, MD, PharmD, DPT, etc.). The category excludes Special Focus Institutions and Tribal Colleges.

- [RU/VH: Research Universities \(very high research activity\)](#)
- [RU/H: Research Universities \(high research activity\)](#)
- [DRU: Doctoral/Research Universities](#)

Master's Colleges and Universities.

Generally, this category includes institutions that award at least 50 master's degrees and fewer than 20 doctoral degrees during the update year (with occasional exceptions – see Methodology). The category excludes Special Focus Institutions and Tribal Colleges.

- [Master's/L: Master's Colleges and Universities \(larger programs\)](#)
- [Master's/M: Master's Colleges and Universities \(medium programs\)](#)
- [Master's/S: Master's Colleges and Universities \(smaller programs\)](#)

Baccalaureate Colleges.

This category includes institutions where baccalaureate degrees represent at least 10 percent of all undergraduate degrees and where fewer than 50 master's degrees or 20 doctoral degrees were awarded during the update year. (Some institutions above the Special Focus Institutions and Tribal Colleges.

- [Bac/A&S: Baccalaureate Colleges—Arts & Sciences](#)
- [Bac/Diverse: Baccalaureate Colleges—Diverse Fields](#)

Classifications are time-specific snapshots of institutional attributes and behavior based on data from 2008 and 2010. Institutions might be classified differently using a different time frame.

Retrieved from: <http://classifications.carnegiefoundation.org/descriptions/basic.php>

Appendix B

Figures of Linear Modeling Assumptions

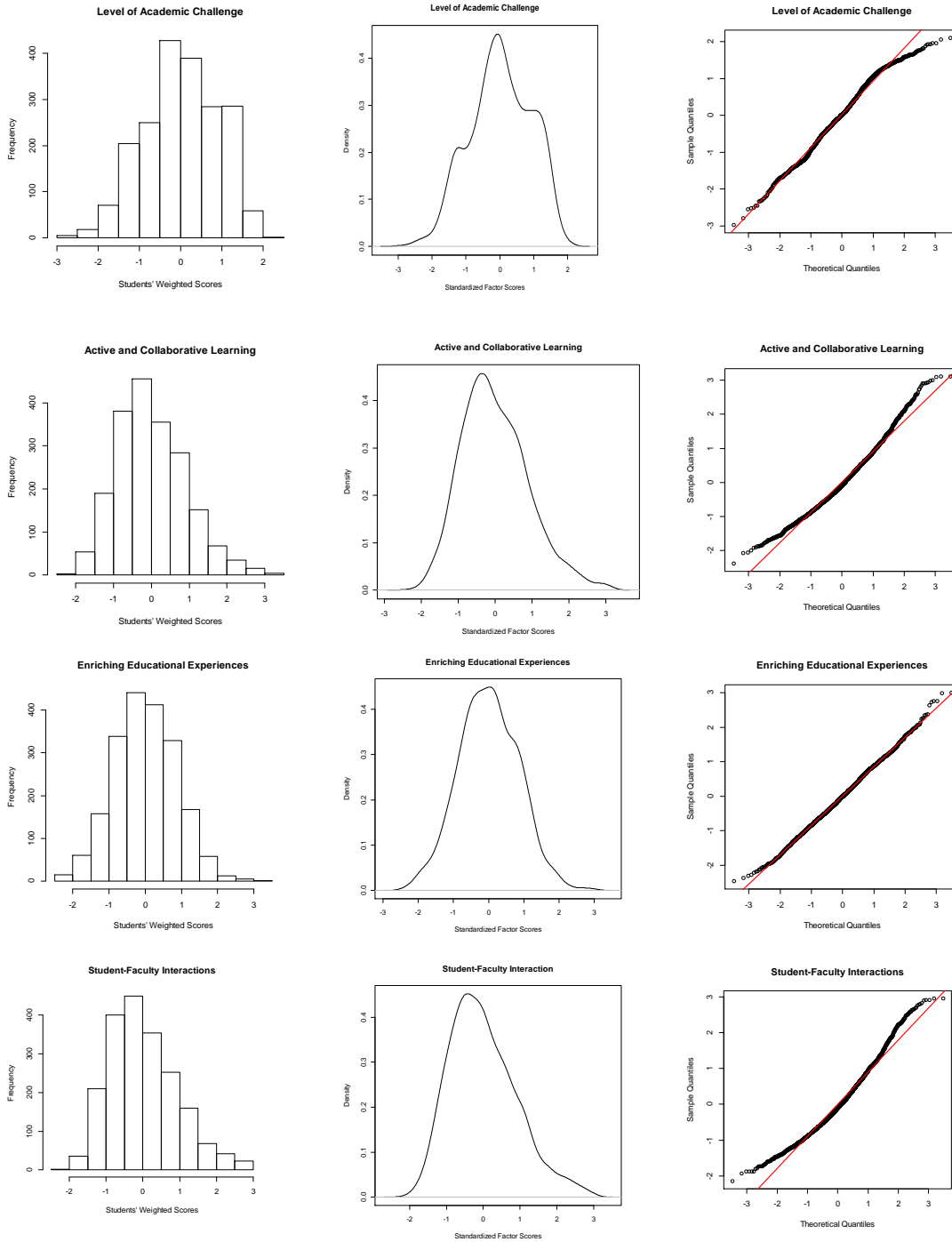


Figure 4.1. Normality Distributions of First-year International Student Engagement

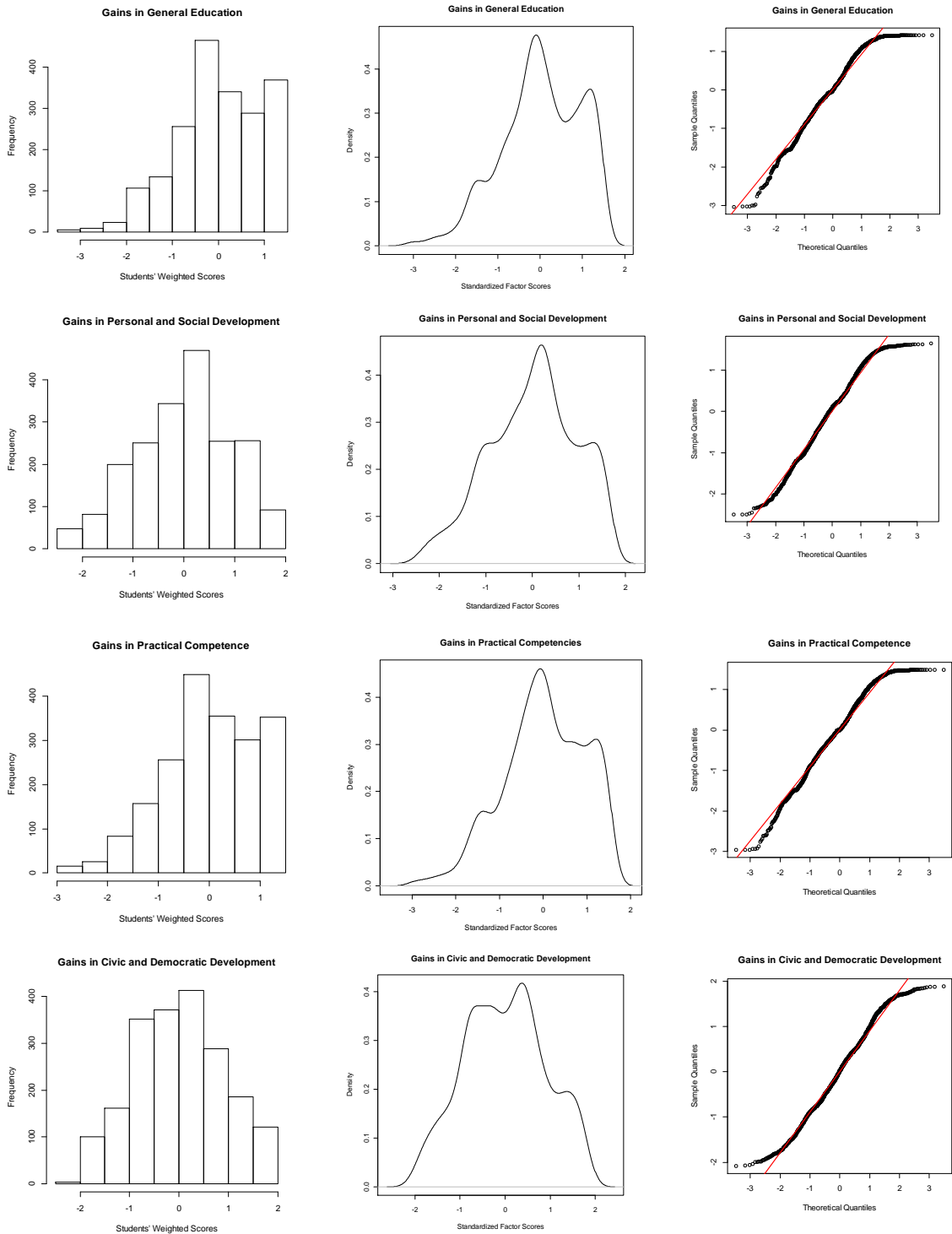


Figure 4.2. Normality Distributions of First-year International Student Success

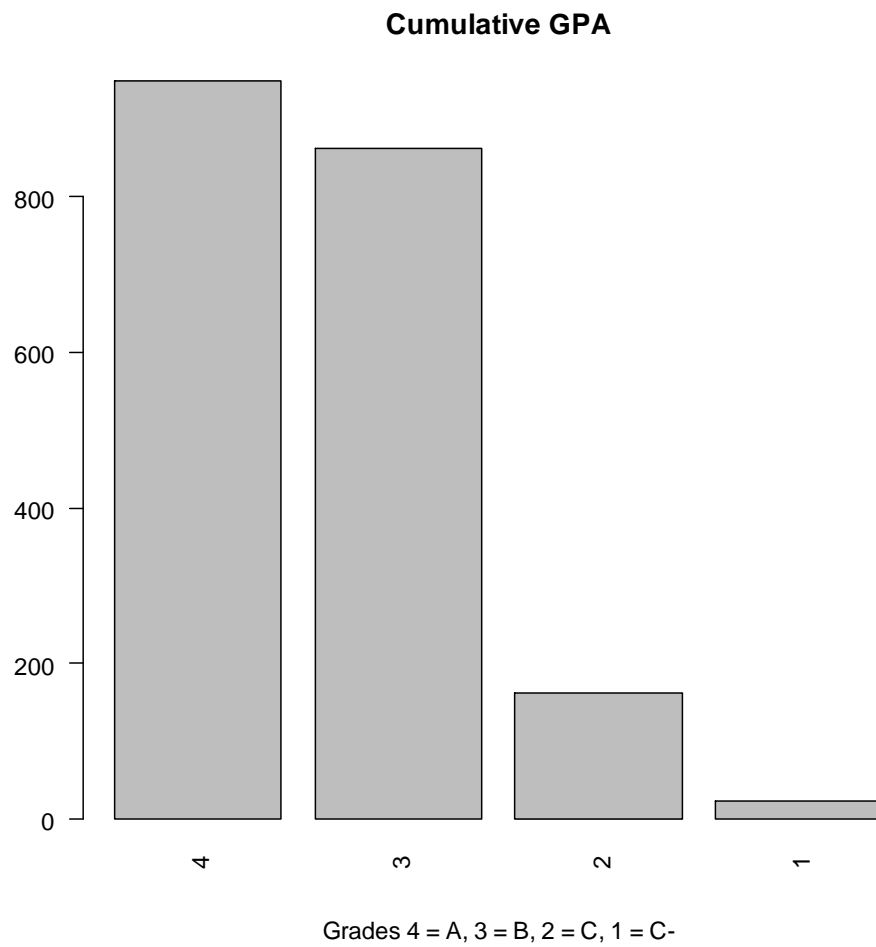


Figure 4.3. Bar plot of the Distribution of Scores for First-year International Students' Cumulative Grade Point Averages.

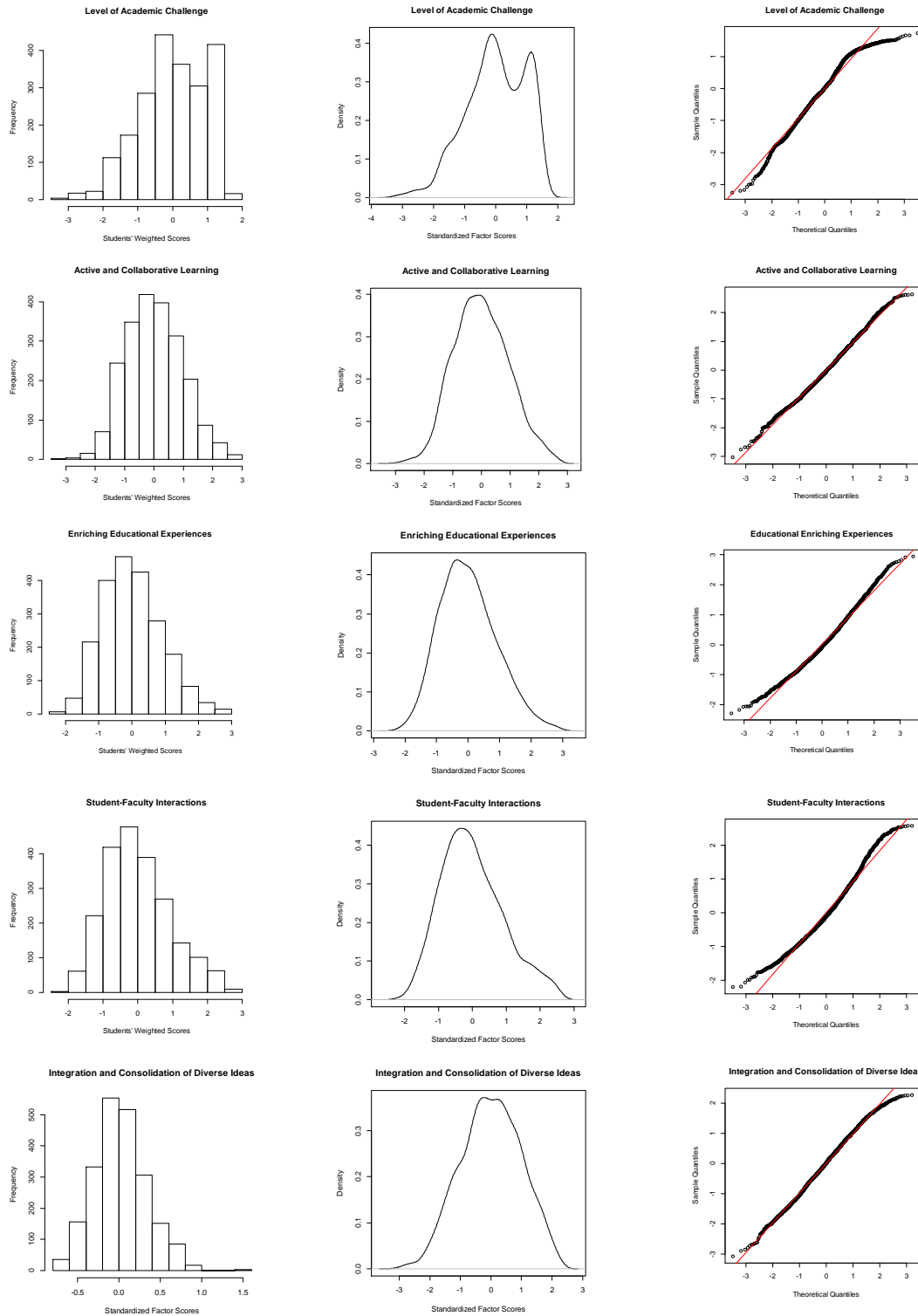


Figure 4.4. Normality Distributions of Senior International Student Engagement

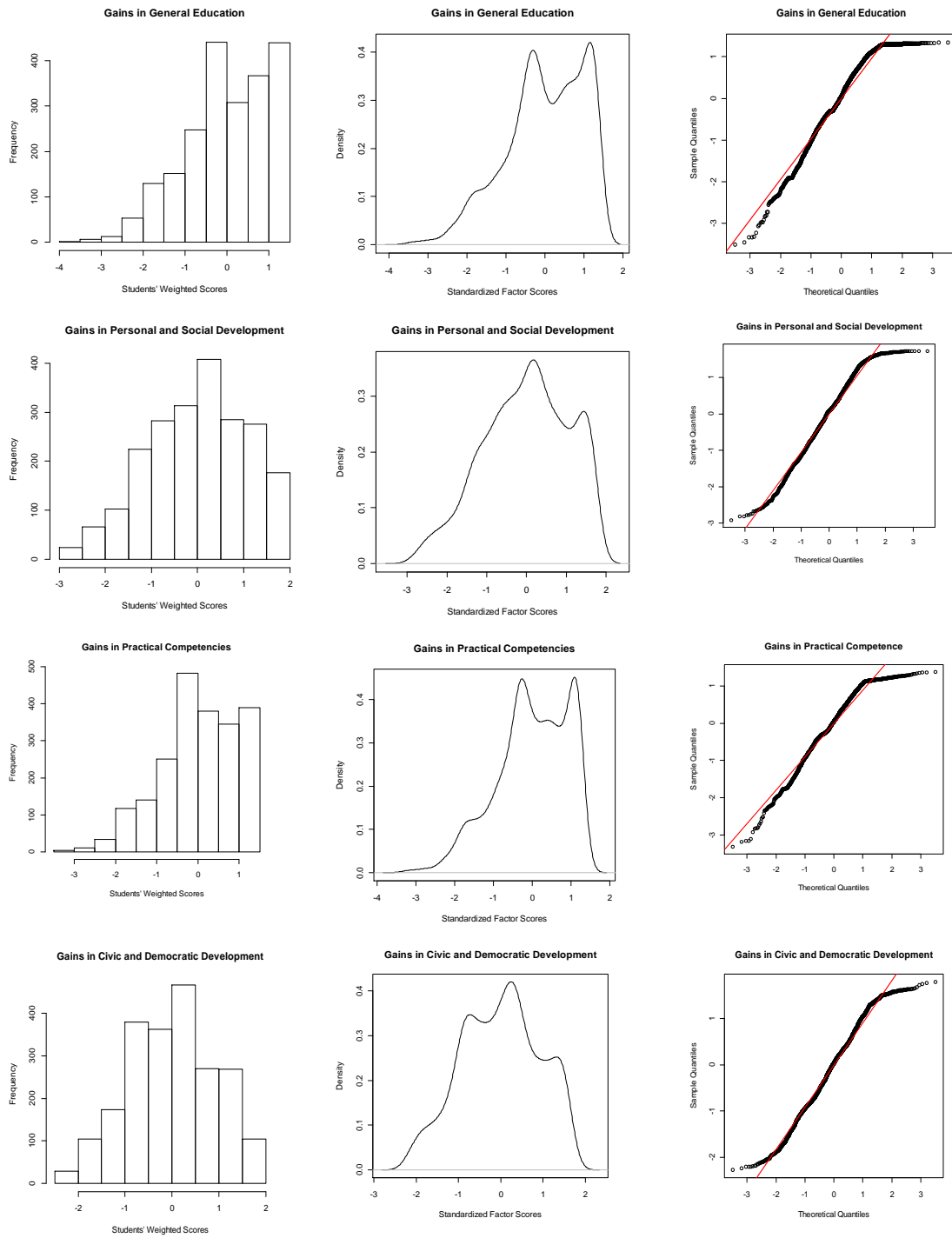


Figure 4.5. Normality Distributions of Senior International Student Success

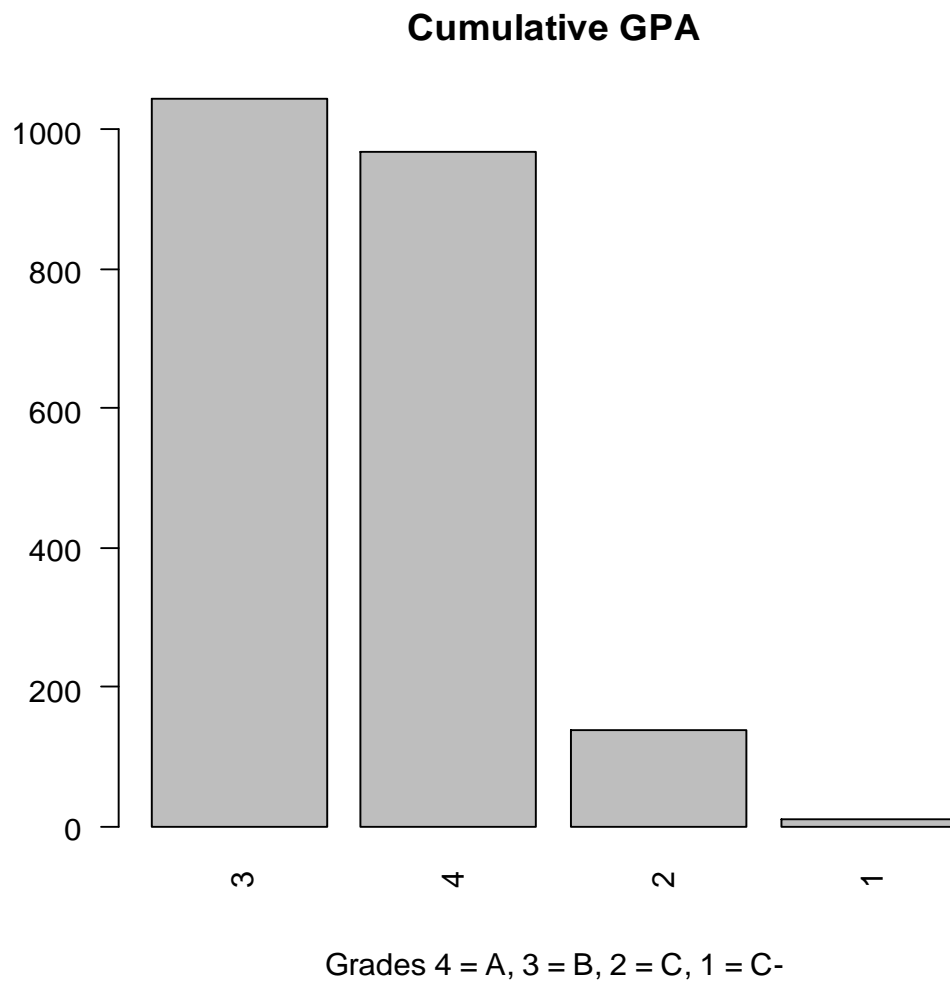


Figure 4.6. Bar plot of the Distribution of Scores for Senior International Students' Cumulative Grade Point Averages.

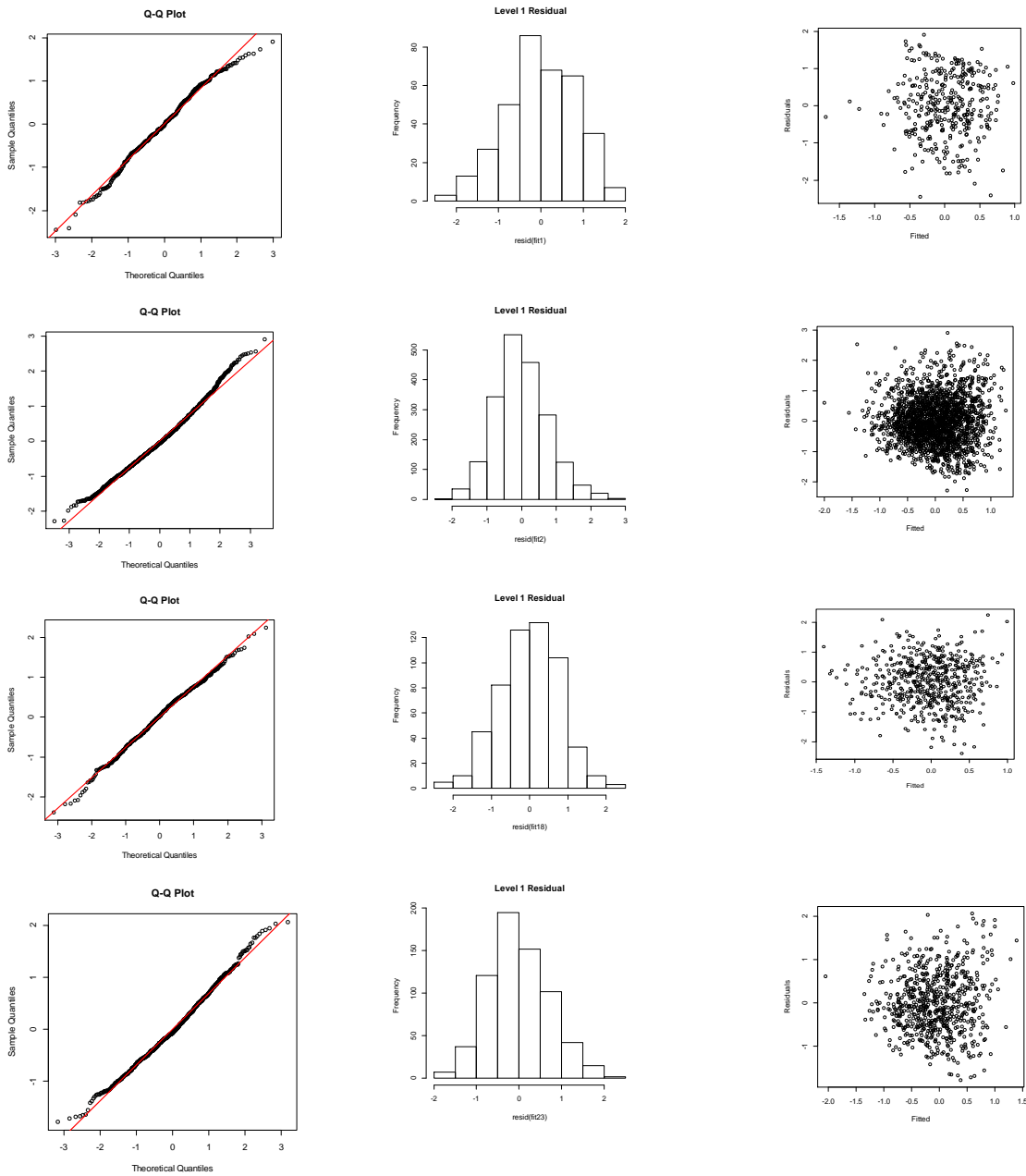


Figure 4.7. Normality, Heterodasticity and Residual close to Zero for Engagement

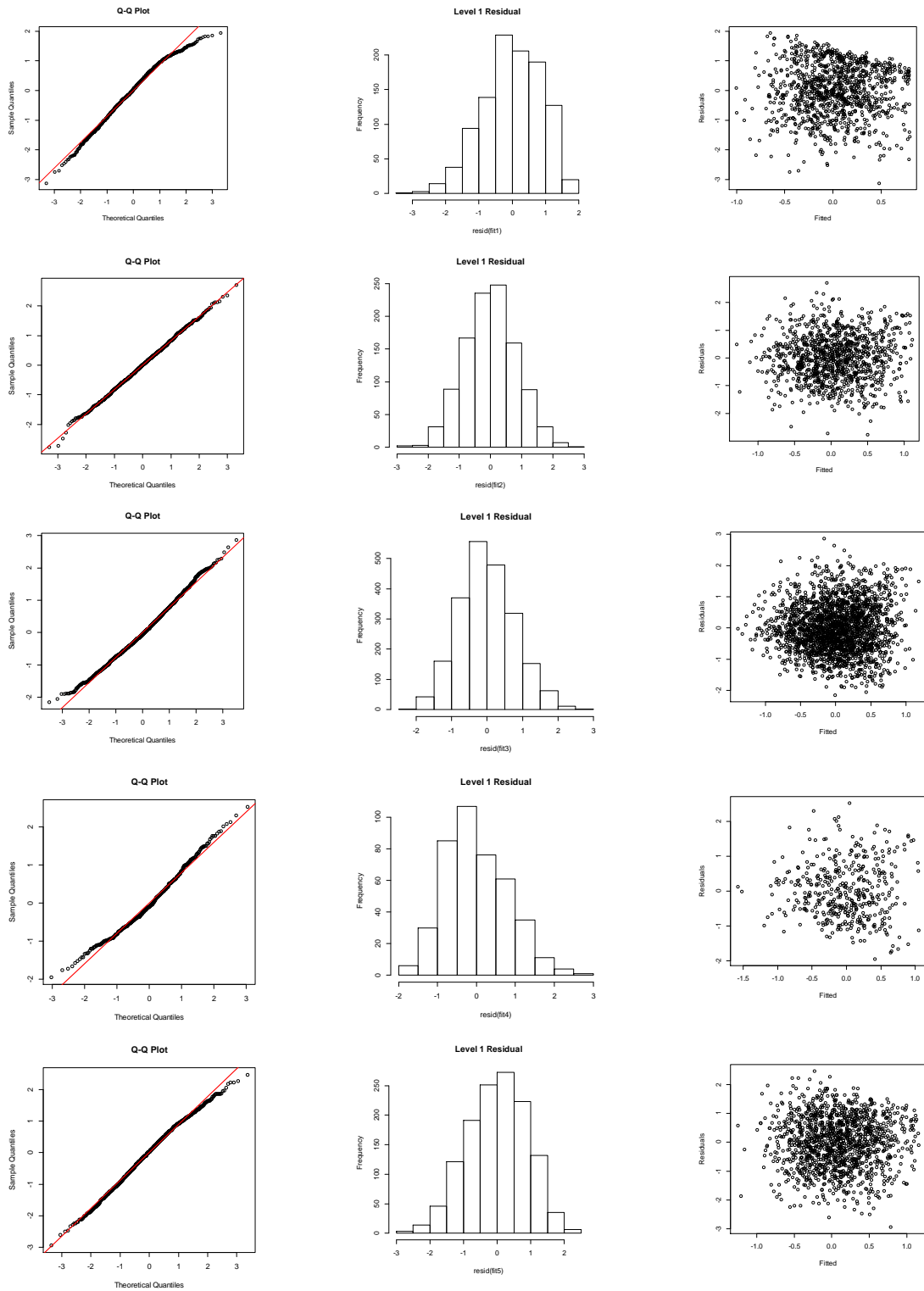


Figure 4.8. Normality, Heterodasticity and Residual close to Zero for Engagement

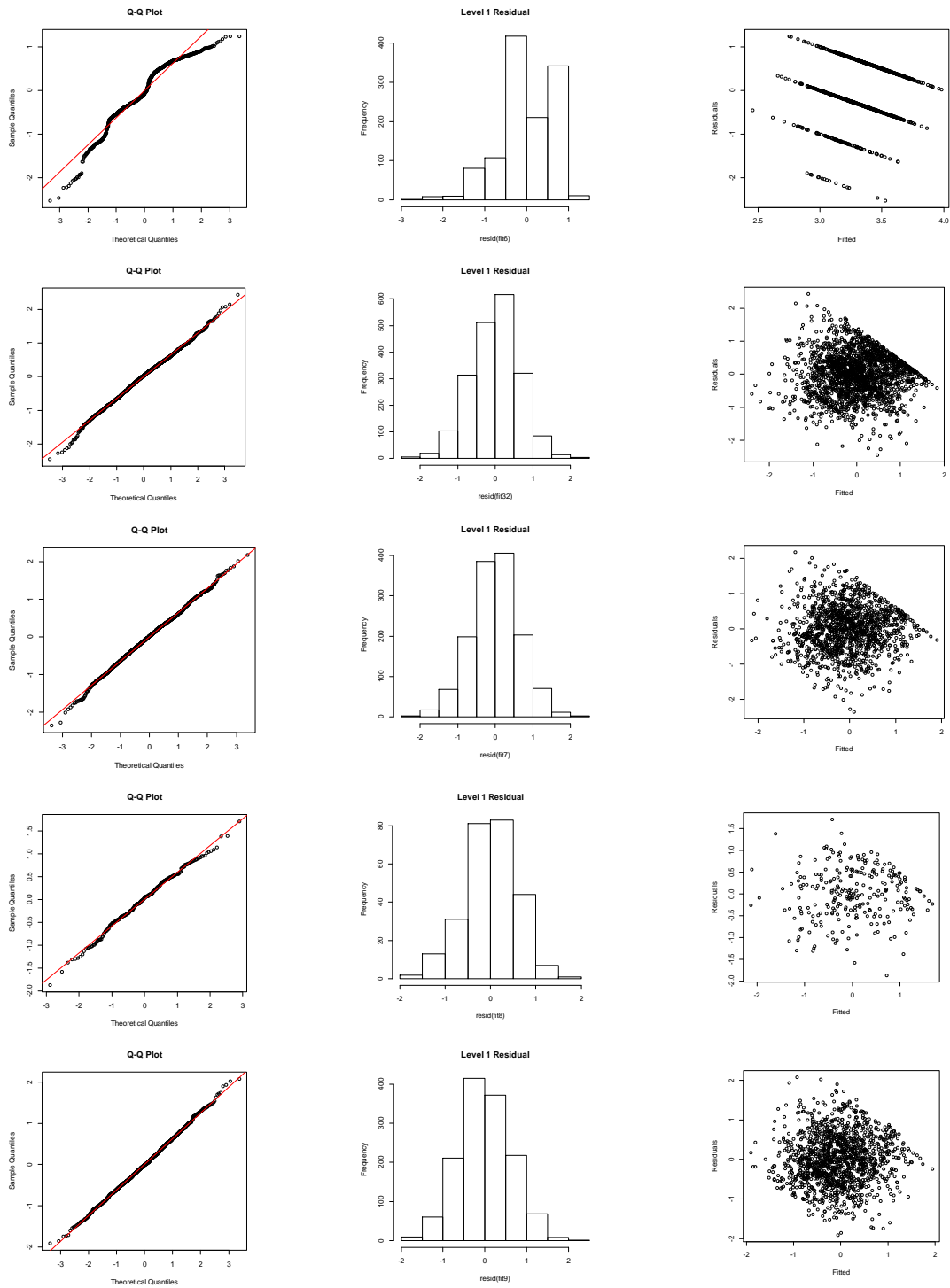


Figure 4.9. Normality, Heterodasticity and Residual close to Zero for First-year Success

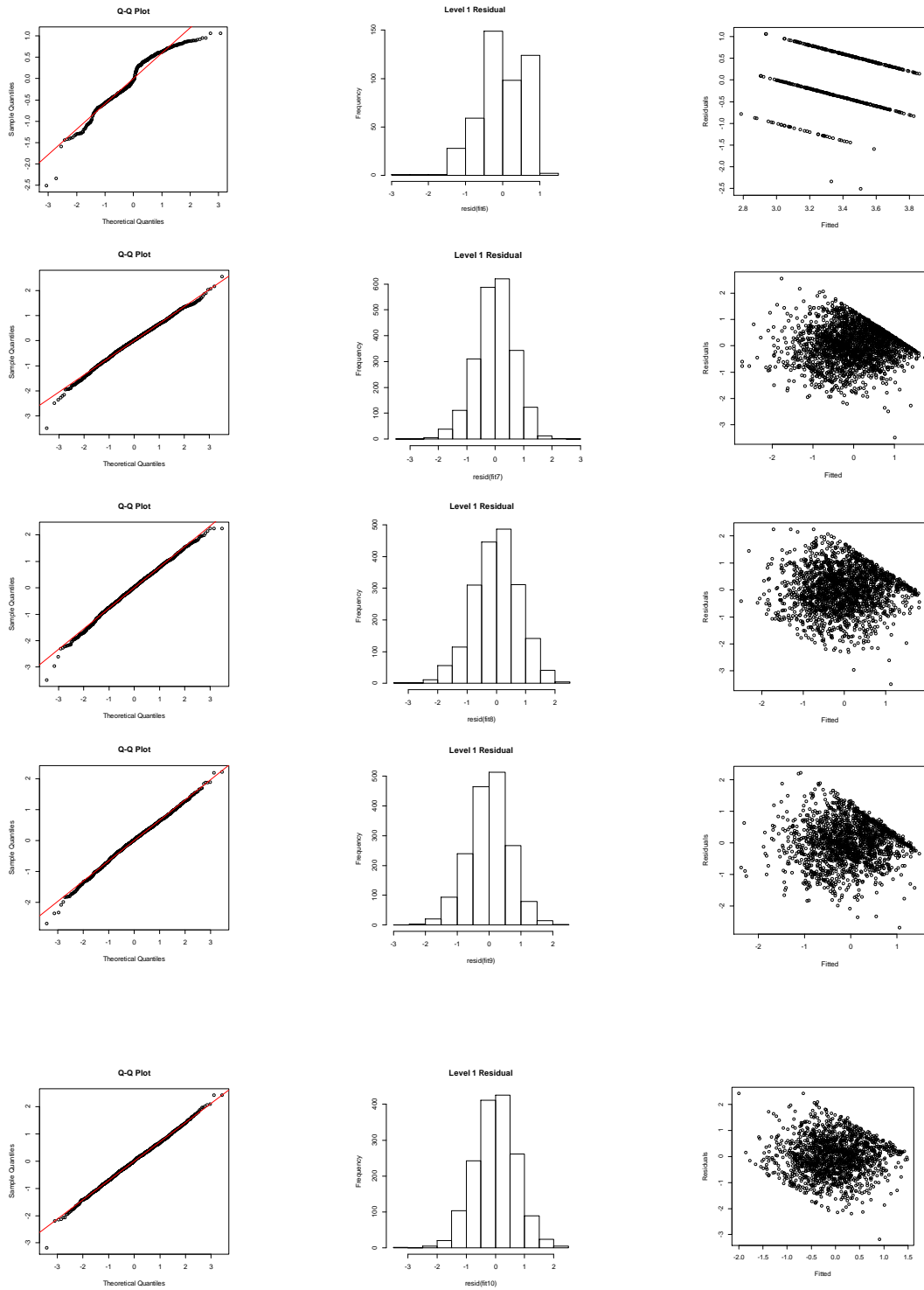


Figure 4.10. Normality, Heterodasticity and Residual close to Zero for Senior Success

APPENDIX C

National Survey of Student Engagement Instrument

National Survey of Student Engagement 2007
The College Student Report

1 In your experience at your institution during the current school year, about how often have you done each of the following? Mark your answers in the boxes. Examples: ☒ or ☑

	Very often	Often	Some-times	Never		Very often	Often	Some-times	Never
a. Asked questions in class or contributed to class discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	r. Worked harder than you thought you could to meet an instructor's standards or expectations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Made a class presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	s. Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Prepared two or more drafts of a paper or assignment before turning it in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	t. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Worked on a paper or project that required integrating ideas or information from various sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	u. Had serious conversations with students of a different race or ethnicity than your own	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	v. Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Come to class without completing readings or assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
g. Worked with other students on projects during class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
h. Worked with classmates outside of class to prepare class assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
i. Put together ideas or concepts from different courses when completing assignments or during class discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
j. Tutored or taught other students (paid or voluntary)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
k. Participated in a community-based project (e.g., service learning) as part of a regular course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
l. Used an electronic medium (listserv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
m. Used e-mail to communicate with an instructor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
n. Discussed grades or assignments with an instructor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
o. Talked about career plans with a faculty member or advisor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
p. Discussed ideas from your readings or classes with faculty members outside of class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
q. Received prompt written or oral feedback from faculty on your academic performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

2 During the current school year, how much has your coursework emphasized the following mental activities?

	Very much	Quite a bit	Some	Very little
a. Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Applying theories or concepts to practical problems or in new situations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3 During the current *school year*, about how much reading and writing have you done?

- a. Number of assigned textbooks, books, or book-length packs of course readings
- None 1-4 5-10 11-20 More than 20
- b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment
- None 1-4 5-10 11-20 More than 20
- c. Number of written papers or reports of **20 pages or more**
- None 1-4 5-10 11-20 More than 20
- d. Number of written papers or reports **between 5 and 19 pages**
- None 1-4 5-10 11-20 More than 20
- e. Number of written papers or reports of **fewer than 5 pages**
- None 1-4 5-10 11-20 More than 20

4 In a *typical week*, how many homework problem sets do you complete?

- None 1-2 3-4 5-6 More than 6
- a. Number of problem sets that take you **more** than an hour to complete
-
- b. Number of problem sets that take you **less** than an hour to complete
-

5 Mark the box that best represents the extent to which your examinations during the current school year have challenged you to do your best work.

- Very little Very much
- 1 2 3 4 5 6 7

6 During the current school year, about how often have you done each of the following?

- Very often Often Some-times Never
- a. Attended an art exhibit, play, dance, music, theater, or other performance
-
- b. Exercised or participated in physical fitness activities
-
- c. Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)
-
- d. Examined the strengths and weaknesses of your own views on a topic or issue
-
- e. Tried to better understand someone else's views by imagining how an issue looks from his or her perspective
-
- f. Learned something that changed the way you understand an issue or concept
-

7 Which of the following have you done or do you plan to do before you graduate from your institution?

- | | Done | Plan to do | Do not plan to do | Have not decided |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| a. Practicum, internship, field experience, co-op experience, or clinical assignment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Community service or volunteer work | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Participate in a learning community or some other formal program where groups of students take two or more classes together | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Work on a research project with a faculty member outside of course or program requirements | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Foreign language coursework | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Study abroad | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| g. Independent study or self-designed major | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| h. Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

8 Mark the box that best represents the quality of your relationships with people at your institution.

- a. Relationships with **other students**
- Unfriendly, Unsupportive, Sense of alienation Friendly, Supportive, Sense of belonging
- 1 2 3 4 5 6 7
- b. Relationships with **faculty members**
- Unavailable, Unhelpful, Unsympathetic Available, Helpful, Sympathetic
- 1 2 3 4 5 6 7
- c. Relationships with **administrative personnel and offices**
- Unhelpful, Inconsiderate, Rigid Helpful, Considerate, Flexible
- 1 2 3 4 5 6 7

9 About how many hours do you spend in a typical 7-day week doing each of the following?

- a. Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)
- 0 1-5 6-10 11-15 16-20 21-25 26-30 More than 30
Hours per week
- b. Working for pay **on campus**
- 0 1-5 6-10 11-15 16-20 21-25 26-30 More than 30
Hours per week
- c. Working for pay **off campus**
- 0 1-5 6-10 11-15 16-20 21-25 26-30 More than 30
Hours per week
- d. Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)
- 0 1-5 6-10 11-15 16-20 21-25 26-30 More than 30
Hours per week
- e. Relaxing and socializing (watching TV, partying, etc.)
- 0 1-5 6-10 11-15 16-20 21-25 26-30 More than 30
Hours per week
- f. Providing care for dependents living with you (parents, children, spouse, etc.)
- 0 1-5 6-10 11-15 16-20 21-25 26-30 More than 30
Hours per week
- g. Commuting to class (driving, walking, etc.)
- 0 1-5 6-10 11-15 16-20 21-25 26-30 More than 30
Hours per week

10 To what extent does your institution emphasize each of the following?

- Very much Very little
Very much a bit Some little
- a. Spending significant amounts of time studying and on academic work
- b. Providing the support you need to help you succeed academically
- c. Encouraging contact among students from different economic, social, and racial or ethnic backgrounds
- d. Helping you cope with your non-academic responsibilities (work, family, etc.)
- e. Providing the support you need to thrive socially
- f. Attending campus events and activities (special speakers, cultural performances, athletic events, etc.)
- g. Using computers in academic work

11 To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?

- Very much Very little
Very much a bit Some little
- a. Acquiring a broad general education
- b. Acquiring job or work-related knowledge and skills
- c. Writing clearly and effectively
- d. Speaking clearly and effectively
- e. Thinking critically and analytically
- f. Analyzing quantitative problems
- g. Using computing and information technology
- h. Working effectively with others
- i. Voting in local, state, or national elections
- j. Learning effectively on your own
- k. Understanding yourself
- l. Understanding people of other racial and ethnic backgrounds
- m. Solving complex real-world problems
- n. Developing a personal code of values and ethics
- o. Contributing to the welfare of your community
- p. Developing a deepened sense of spirituality

12 Overall, how would you evaluate the quality of academic advising you have received at your institution?

- Excellent
- Good
- Fair
- Poor

13 How would you evaluate your entire educational experience at this institution?

- Excellent
- Good
- Fair
- Poor

14 If you could start over again, would you go to the *same institution* you are now attending?

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

15 Write in your year of birth:

16 Your sex:
 Male Female

17 Are you an international student or foreign national?
 Yes No

18 What is your racial or ethnic identification? (Mark only one.)

- American Indian or other Native American
 Asian, Asian American, or Pacific Islander
 Black or African American
 White (non-Hispanic)
 Mexican or Mexican American
 Puerto Rican
 Other Hispanic or Latino
 Multiracial
 Other
 I prefer not to respond

19 What is your current classification in college?

- Freshman/first-year Senior
 Sophomore Unclassified
 Junior

20 Did you begin college at your current institution or elsewhere?
 Started here Started elsewhere

21 Since graduating from high school, which of the following types of schools have you attended other than the one you are attending now? (Mark all that apply.)

- Vocational or technical school
 Community or junior college
 4-year college other than this one
 None
 Other

22 Thinking about this current academic term, how would you characterize your enrollment?

- Full-time Less than full-time

23 Are you a member of a social fraternity or sorority?

- Yes No

24 Are you a student-athlete on a team sponsored by your institution's athletics department?

- Yes No (Go to question 25.)

On what team(s) are you an athlete (e.g., football, swimming)? Please answer below:

25 What have most of your grades been up to now at this institution?

- A B+ C+
 A- B C
 B- C- or lower

26 Which of the following best describes where you are living now while attending college?

- Dormitory or other campus housing (not fraternity/sorority house)
 Residence (house, apartment, etc.) within walking distance of the institution
 Residence (house, apartment, etc.) within driving distance of the institution
 Fraternity or sorority house

27 What is the highest level of education that your parent(s) completed? (Mark one box per column.)

- | Father | Mother | |
|--------------------------|--------------------------|-------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Did not finish high school |
| <input type="checkbox"/> | <input type="checkbox"/> | Graduated from high school |
| <input type="checkbox"/> | <input type="checkbox"/> | Attended college but did not complete degree |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed an associate's degree (A.A., A.S., etc.) |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed a bachelor's degree (B.A., B.S., etc.) |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed a master's degree (M.A., M.S., etc.) |
| <input type="checkbox"/> | <input type="checkbox"/> | Completed a doctoral degree (Ph.D., J.D., M.D., etc.) |

28 Please print your major(s) or your expected major(s).

a. Primary major (Print only one.):

b. If applicable, second major (not minor, concentration, etc.):

THANKS FOR SHARING YOUR VIEWS!

After completing the survey, please put it in the enclosed postage-paid envelope and deposit it in any U.S. Postal Service mailbox. Questions or comments? Contact the National Survey of Student Engagement, Indiana University, 1900 East Tenth Street, Eigenmann Hall Suite 419, Bloomington IN 47406-7512 or nsse@indiana.edu or www.nsse.iub.edu. Copyright © 2006 Indiana University.

Appendix D

NSSE Data Sharing Agreement



**Indiana University Center for Postsecondary Research
Data Sharing Agreement**

This Indiana University Center for Postsecondary Research Data Sharing Agreement ("Agreement") defines the parameters for data sharing from the National Survey of Student Engagement ("NSSE") between the Research Institution and its Authorized Researchers named below and the Trustees of Indiana University on behalf of the Indiana University Center for Postsecondary Research ("IUCPR"). The terms below are intended to reflect and comply with the existing agreements between NSSE and the institutions that participate in the survey program. Under these participation agreements, NSSE may:

"...make data, in which individual institutions or students cannot be identified, available to researchers interested in studying the undergraduate experience... NSSE results specific to each institution and identified as such will not be made public except by mutual agreement between NSSE and the institution."

RESEARCHERS

The following researchers ("Authorized Researchers") of University of Minnesota ("Research Institution") may make use of NSSE data pursuant to the terms of this Agreement:

Gareth Phillips	University of Minnesota
Professor Rebecca Ropers-Huilman	University of Minnesota

DATA DESCRIPTION

Under this Agreement, IUCPR will provide the researchers a data file delimited in the following ways ("NSSE Data File"):

- **Data Source:** NSSE 2007
- **Variables:** All survey items and institution reported ACT and SAT scores. In addition, the institutional characteristic of Carnegie classification will be provided. Each Carnegie classification will include at least 5 institutions or be collapsed accordingly. All student and institution identifying information will be removed. In addition, a fabricated institutional number will be added so that the researcher can tell which students are from the same institution.
- **Cases:** A stratified random sample of 2,000 cases of all international first-year and senior students who attend a U.S. institution by student self-identified race/ethnicity and class. There will be 250 cases within each of the four selected race/ethnicity categories: White, Black, Hispanic, and Asian for each class.



PARAMETERS FOR DATA SHARING:

1. IUCPR will provide a single copy of the NSSE Data File solely for non-commercial research by the Authorized Researchers.
2. The NSSE Data File will exclude the Unit ID code from Integrated Postsecondary Educational Data System (IPEDS), any other unique school or student identifiers, and any variables that IUCPR determines reasonably may permit the identification of a participating school or student.
3. The Authorized Researchers will not make any attempt, privately or publicly, to associate elements of the NSSE Data File with the individual institutions or individual students participating in the NSSE, nor will they share the data with anyone else who might do so.
4. In all publications or presentations of data obtained through this agreement, the Authorized Researchers agree to include the following citation: "NSSE data were used with permission from The Indiana University Center for Postsecondary Research."
5. The Authorized Researchers agree to provide to IUCPR a copy of all reports, presentations, analyses, or other materials in which the data given under this Agreement are presented, discussed, or analyzed.
6. **The data should be encrypted when not in use by the above researcher and should be destroyed once this particular research project (dissertation) has been completed. If the researcher needs the data for any longer period than that which is necessary for completing the dissertation, the researcher is required to ask for an extension. Using the data for other purposes besides completing the designated project (dissertation) must be approved by the Director for the Center for Postsecondary Research at Indiana University at Bloomington.**
7. The IUCPR of Indiana University may, by written notification to the Authorized Researchers and the Research Institution, terminate this Agreement if it determines, in its sole discretion, that either the Authorized Researchers or the Research Institution have breached the terms of this Agreement. In the event that this Agreement is terminated, the Authorized Researchers and Research Institution shall return the originals and all copies of the NSSE Data File to the IUCPR, and securely destroy all NSSE Data File elements contained in any analyses or other materials created or maintained by Authorized Researchers, within ten (10) days of the receipt of the termination notice.
8. IU will not be liable to the Research Institution for any direct, consequential, or other damages, related to the use of the NSSE Data File or any other information delivered by Indiana University or IUCPR in accordance with this Agreement. The Research



Institution shall defend, indemnify, and hold harmless The Trustees of Indiana University, their officers, employees, and agents, with respect to any and all claims, causes of action, losses, and liabilities, of any kind whatsoever, arising directly or indirectly from the Authorized Researchers' use of the NSSE Data File.

9. FEES

In exchange for access to and use of the NSSE Data File, **Gareth Phillips** agrees to pay Indiana University the sum of **\$550**, by check upon execution of this Agreement;

SIGNATURES

The undersigned hereby consent to the terms of this Agreement and confirm that they have all necessary authority to enter into this Agreement.

For The Trustees of Indiana University:

Marcia Landen

Marcia Landen
Director, Grant Services
Office of the VP for Research Administration
Indiana University

6/10/11
Date

Alex McCormick

Alexander C. McCormick
Director,
National Survey of Student Engagement

6/6/2011
Date

For the Research Institution:

J. L. Kelly

Name, Title, and Organization
Authorized Institutional Official of Research Institution

Jana Kelly
Director, Institutional Research
University of Minnesota - Twin Cities

5/31/2011
Date

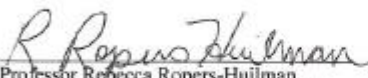


Acknowledgment of Authorized Researchers:



Gareth Phillips
Doctoral Student
University of Minnesota (Twin Cities)

5/31/11
Date



Professor Rebecca Ropers-Huilman
Chair, Organizational Leadership, Policy and Development
University of Minnesota (Twin Cities)

5-31-11
Date

Appendix E

University of Minnesota IRB Exempt Status Approval

UNIVERSITY OF MINNESOTA

Twin Cities Campus

Human Research Protection Program
Office of the Vice President for ResearchD528 Mayo Memorial Building
420 Delaware Street S.E.
MMC 820
Minneapolis, MN 55455
Office: 612-626-5654
Fax: 612-626-6061
E-mail: irb@umn.edu or ibc@umn.edu
Website: <http://research.umn.edu/subjects/>

September 15, 2011

Gareth Phillips

RE: "A Comparative Study of International Student Engagement and Success
based on Race and Ethnicity, Gender, and Institutional Type"
IRB Code Number: **1108E03829**

Mr. Phillips:

The IRB Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #4 EXISTING DATA; RECORDS REVIEW; PATHOLOGICAL SPECIMENS.

The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

If you requested a waiver of HIPAA Authorization, the waiver was granted. Please note that under a waiver of the HIPAA Authorization, the HIPAA regulation [164.528] states that the subject has the right to request and receive an accounting of Disclosures of PHI made by the covered entity in the six years prior to the date on which the accounting is requested.

This exemption is valid for five years from the date of this correspondence and will be filed inactive at that time. You will receive a notification prior to inactivation. If this research will extend beyond five years, you must submit a new application to the IRB before the study's expiration date.

Upon receipt of this letter, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

You may go to the View Completed section of eResearch Central at <http://eresearch.umn.edu/> to view further details on your study.

The IRB wishes you success with this research.

Sincerely,



Christina Dobnovolky, CIP
Research Compliance Supervisor
CC: Rebecca Ropers-Huilman

Driven to Discover™

Appendix F

HLM Results

Estimates for Models 1-4 Predicting the Level of Academic Challenge for First Years

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
	Fixed effects							
Intercept	0.02	0.03	-0.24 *	0.10	-0.13	0.10	-0.17	0.12
Level 1 (Student)								
Age			0.02	0.08	0.02	0.08	0.01	0.08
Major			-0.33 **	0.10	-0.32 **	0.10	-0.33 **	0.10
Father's Education:								
Undergraduate			0.06	0.05	0.05	0.05	0.04	0.05
Graduate			0.15 **	0.06	0.13 *	0.06	0.12 *	0.06
Mother's Education:								
Undergraduate			0.02	0.05	0.03	0.05	0.04	0.05
Graduate			0.03	0.06	0.03	0.06	0.04	0.06
Residence			0.02	0.04	0.04	0.04	0.04	0.04
Enrollment Status			0.17	0.09	0.16	0.09	0.15	0.09
Student Perception:								
Support for success			0.26 ***	0.02	0.26 ***	0.02	0.26 ***	0.02
Interpersonal environment			0.13 ***	0.03	0.13 ***	0.03	0.13 ***	0.03
Satisfaction			0.11 ***	0.03	0.11 ***	0.03	0.11 ***	0.03
Race/Ethnicity:								
Hispanic							0.09	0.14
Black							-0.15	0.21
Asian							0.07	0.10
Level 2 (Institution)								
Campus Environment:								
Institutional Control			0.02	0.05	0.08	0.05	0.08	0.05
Academic			0.27 ***	0.10	0.35 ***	0.10	0.34 ***	0.09
Spiritual and Social			-0.43 ***	0.13	-0.40 ***	0.13	-0.40 ***	0.12
Learning Outcome			0.54 ***	0.14	0.41 ***	0.14	0.42 ***	0.14
Institutional Types:								
2					-0.08	0.07	-0.27 *	0.12
3					-0.20 *	0.10	-0.11	0.15
4					-0.18 ***	0.06	-0.12	0.11
5					-0.28 **	0.09	-0.39 *	0.16
6					-0.19	0.13	-0.28	0.21
7					-0.13	0.09	-0.04	0.15
8					-0.09	0.12	-0.31	0.23

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Hispanic : Type 2							0.21	0.19
Black : Type 2							0.53 *	0.28
Asian : Type 2							0.27 *	0.15
Hispanic : Type 3							-0.17	0.23
Black : Type 3							0.20	0.34
Asian : Type 3							0.11	0.21
Hispanic : Type 4							-0.09	0.17
Black : Type 4							0.05	0.25
Asian : Type 4							-0.08	0.13
Hispanic : Type 5							0.13	0.23
Black : Type 5							0.19	0.32
Asian : Type 5							0.25	0.20
Hispanic : Type 6							0.49	0.37
Black : Type 6							0.38	0.37
Asian : Type 6							-0.30	0.37
Hispanic : Type 7							0.00	0.24
Black : Type 7							0.03	0.30
Asian : Type 7							-0.15	0.18
Hispanic : Type 8							0.02	0.31
Black : Type 8							0.95 **	0.38
Asian : Type 8							0.21	0.31
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.04 *	0.20	0.02	0.13	0.01	0.10	0.01	0.11
Race/ethnicity								
Hispanic							0.04	0.21
Black							0.05	0.22
Asian							0.02	0.14
Level 1								
Intercept/Intercept	0.78	0.88	0.63	0.79	0.63	0.79	0.61	0.78
Model Fit								
AIC	5246		4816		4817		4843	
BIC	5263		4916		4957		5168	
Deviance	5240		4780		4767		4727	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates For Models 5-7 Predicting The Level of Academic Challenge For First Years

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.06	0.11	-0.17	0.11	-0.15	0.14
Level 1 (Student)						
Age	0.01	0.08	0.02	0.08	0.00	0.08
Major	-0.31 **	0.10	-0.30 **	0.10	-0.33 **	0.10
Father's Education:						
Undergraduate	0.05	0.05	0.04	0.05	0.04	0.05
Graduate	0.13 *	0.06	0.12 *	0.06	0.12 *	0.06
Mother's Education:						
Undergraduate	0.02	0.05	0.03	0.05	0.04	0.05
Graduate	0.03	0.06	0.04	0.06	0.03	0.06
Residence	0.04	0.04	0.03	0.04	0.04	0.04
Enrollment Status	0.16	0.09	0.15	0.09	0.17 *	0.09
Student Perception:						
Support for success	0.26 ***	0.02	0.26 ***	0.02	0.26 ***	0.02
Interpersonal environment	0.13 ***	0.03	0.13 ***	0.03	0.13 ***	0.03
Satisfaction	0.11 ***	0.03	0.11 ***	0.03	0.11 ***	0.03
Race/Ethnicity:						
Hispanic			0.10	0.05	0.03	0.14
Black			0.08	0.08	-0.01	0.22
Asian			0.10	0.05	0.02	0.15
Gender - female	-0.09	0.08	-0.04	0.04	-0.05	0.10
Hispanic : female					0.11	0.10
Black : female					-0.22	0.14
Asian : female					-0.03	0.09
Level 2 (Institution)						
Campus Environment:						
Institutional Control	0.07	0.05	0.07	0.05	0.08	0.05
Academic	0.34 ***	0.09	0.36 ***	0.10	0.34 ***	0.09
Spiritual and Social	-0.42 ***	0.12	-0.43 ***	0.13	-0.41 ***	0.12
Learning Outcome	0.44 ***	0.14	0.42 ***	0.14	0.45 ***	0.14
Institutional Types:						
2	-0.10	0.08	-0.09	0.07	-0.25	0.14
3	-0.34 **	0.12	-0.19 *	0.09	-0.23	0.18
4	-0.22 *	0.08	-0.16 **	0.06	-0.12	0.13
5	-0.29 *	0.12	-0.27 **	0.09	-0.39 *	0.18

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
6	-0.32	0.22	-0.19	0.14	-0.50	0.30
7	-0.19	0.11	-0.12	0.09	-0.09	0.18
8	-0.04	0.15	-0.11	0.12	-0.20	0.26
Female : Type 2	0.00	0.12			-0.03	0.12
Female : Type 3	0.23	0.17			0.21	0.16
Female : Type 4	0.05	0.10			0.00	0.11
Female : Type 5	0.03	0.16			-0.01	0.16
Female : Type 6	0.19	0.27			0.30	0.27
Female : Type 7	0.10	0.14			0.08	0.14
Female : Type 8	-0.15	0.22			-0.20	0.22
Hispanic : Type 2					0.20	0.19
Black : Type 2					0.47	0.27
Asian : Type 2					0.25	0.15
Hispanic : Type 3					-0.19	0.23
Black : Type 3					0.19	0.33
Asian : Type 3					-0.11	0.21
Hispanic : Type 4					-0.10	0.17
Black : Type 4					0.01	0.25
Asian : Type 4					-0.08	0.14
Hispanic : Type 5					0.12	0.23
Black : Type 5					0.19	0.31
Asian : Type 5					0.26	0.20
Hispanic : Type 6					0.53	0.37
Black : Type 6					0.40	0.36
Asian : Type 6					-0.31	0.37
Hispanic : Type 7					0.01	0.24
Black : Type 7					0.01	0.30
Asian : Type 7					-0.15	0.18
Hispanic : Type 8					0.01	0.31
Black : Type 8					0.91 *	0.37
Asian : Type 8					0.17	0.32
	Random parameters					
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.01	0.12
Gender: female	0.02	0.14	0.02	0.12	0.01	0.12

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Race/ethnicity:						
Hispanic			0.02	0.14	0.05	0.21
Black			0.11	0.33	0.04	0.20
Asian			0.01	0.09	0.02	0.15
Level 1						
Intercept/Intercept	0.63	0.79	0.61	0.78	0.60	0.77
Model Fit						
AIC	4830		4835		4858	
BIC	5026		5076		5273	
Deviance	4760		4749		4710	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting the Level of Academic Challenge for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.01	0.03	-0.26 **	0.09	-0.19	0.10	-0.29 *	0.12
Level 1 (Student)								
Age			-0.09 *	0.04	-0.08	0.04	-0.08 *	0.04
Transfer Status			0.02	0.04	0.01	0.04	0.02	0.04
Major:								
STEM			0.15 **	0.05	0.14 *	0.05	0.14 *	0.06
Business/Professional			0.09	0.05	0.09	0.05	0.08	0.05
Social Sciences/Education			0.05	0.06	0.05	0.06	0.05	0.06
Father's Education:								
Undergraduate			0.06	0.05	0.05	0.05	0.07	0.05
Graduate			0.10	0.06	0.10	0.06	0.11	0.06
Mother's Education:								
Undergraduate			-0.03	0.05	-0.04	0.05	-0.04	0.05
Graduate			0.00	0.07	-0.01	0.07	-0.02	0.07
Residence			0.10	0.06	0.07	0.06	0.07	0.06
Enrollment Status			0.12 *	0.05	0.12 *	0.06	0.14 *	0.06
Student Perception:								
Support for success			0.26 ***	0.03	0.26 ***	0.03	0.26 ***	0.03
Interpersonal environment			0.11 **	0.04	0.11 **	0.04	0.11 **	0.04
Satisfaction			0.05	0.03	0.04	0.03	0.03	0.03
Race/Ethnicity:								
Hispanic							0.26 *	0.13
Black							0.24	0.17
Asian							0.03	0.10
Level 2 (Institution)								
Campus Environment:								
Institutional Control			-0.01	0.05	0.05	0.06	0.06	0.05
Spiritual and Social			-0.58 **	0.21	-0.59 **	0.22	-0.56 **	0.22
Learning Outcome			0.83 ***	0.22	0.06	0.23	0.82 ***	0.24
Institutional Types:								
2					0.01	0.06	0.08	0.11
3					-0.08	0.08	-0.26	0.15
4					-0.04	0.06	0.00	0.10
5					-0.04	0.10	-0.22	0.21
6					-0.17	0.12	-0.23	0.18

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
7					-0.19 *	0.09	-0.20	0.16
8					-0.19	0.14	-0.09	0.36
Hispanic : Type 2							-0.17	0.17
Black : Type 2							-0.23	0.22
Asian : Type 2							-0.07	0.15
Hispanic : Type 3							0.12	0.22
Black : Type 3							0.05	0.25
Asian : Type 3							0.37	0.19
Hispanic : Type 4							-0.08	0.16
Black : Type 4							-0.26	0.21
Asian : Type 4							-0.04	0.13
Hispanic : Type 5							0.10	0.27
Black : Type 5							-0.30	0.40
Asian : Type 5							0.30	0.28
Hispanic : Type 6							-0.14	0.34
Black : Type 6							0.41	0.35
Asian : Type 6							-0.02	0.29
Hispanic : Type 7							-0.02	0.28
Black : Type 7							-0.02	0.31
Asian : Type 7							0.06	0.19
Hispanic : Type 8							-0.42	0.43
Black : Type 8							-0.29	0.49
Asian : Type 8							0.26	0.48
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.03	0.18	0.01	0.00	0.00	0.00	0.00	0.00
Race/ethnicity								
Hispanic							0.00	0.00
Black							0.00	0.00
Asian							0.00	0.08
Level 1								
Intercept/Intercept	0.87	0.93	0.75	0.86	0.75	0.86	0.74	0.86
Model Fit								
AIC	5892		5564		5571		5604	
BIC	5909		5678		5724		5944	
Deviance	5892		5524		5517		5484	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting the Level of Academic Challenge for Seniors

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.19	0.11	-0.31 **	0.11	-0.34 **	0.14
Level 1 (Student)						
Age	-0.08	0.04	-0.08	0.04	-0.09 *	0.04
Transfer Status	0.02	0.04	0.02	0.04	0.02	0.04
Major:						
STEM	0.14 **	0.05	0.14 *	0.06	0.14 **	0.05
Business/Professional	0.08	0.05	0.08	0.05	0.08	0.05
Social Sciences/Education	0.05	0.06	0.03	0.06	0.05	0.06
Father's Education:						
Undergraduate	0.06	0.05	0.06	0.05	0.07	0.05
Graduate	0.10	0.06	0.11	0.06	0.12	0.06
Mother's Education:						
Undergraduate	-0.05	0.05	-0.04	0.05	-0.05	0.05
Graduate	-0.01	0.07	-0.01	0.07	-0.03	0.07
Residence	0.08	0.06	0.07	0.06	0.08	0.06
Enrollment Status	0.13 *	0.06	0.14 *	0.06	0.15 **	0.06
Student Perception:						
Support for success	0.26 ***	0.03	0.25 ***	0.03	0.26 ***	0.03
Interpersonal environment	0.11 **	0.04	0.11 **	0.04	0.11 **	0.04
Satisfaction	0.04	0.03	0.03	0.03	0.03	0.03
Race/ethnicity						
Hispanic			0.20 ***	0.06	0.34 *	0.14
Black			0.11	0.07	0.35	0.18
Asian			0.04	0.05	0.08	0.11
Gender - female	-0.03	0.08	0.06	0.04	0.07	0.10
Hispanic : female					-0.14	0.11
Black : female					-0.23	0.14
Asian : female					-0.09	0.10
Level 2 (Institution)						
Institutional Control	-0.04	0.05	0.05	0.05	0.05	0.05
Spiritual and Social	-0.59 **	0.22	-0.59 **	0.22	-0.54 **	0.22
Learning Outcome	0.85 ***	0.23	0.84 ***	0.24	0.80 ***	0.24

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Institutional Types:						
2	-0.03	0.09	-0.01	0.06	0.03	0.14
3	-0.14	0.12	-0.09	0.09	-0.30	0.17
4	-0.18 *	0.08	-0.05	0.06	-0.14	0.12
5	0.07	0.15	-0.10	0.10	-0.08	0.24
6	0.14	0.18	-0.17	0.12	0.07	0.24
7	-0.26 *	0.13	-0.19 *	0.09	-0.29	0.19
8	-0.17	0.23	-0.25	0.15	-0.08	0.39
Female : Type 2	0.08	0.12			0.08	0.12
Female : Type 3	0.12	0.15			0.95	0.15
Female : Type 4	0.24 *	0.11			0.24 *	0.11
Female : Type 5	-0.17	0.19			-0.24	0.20
Female : Type 6	-0.48 *	0.23			-0.43	0.23
Female : Type 7	0.13	0.15			0.13	0.15
Female : Type 8	-0.03	0.29			-0.01	0.30
Hispanic : Type 2					-0.16	0.17
Black : Type 2					-0.20	0.22
Asian : Type 2					-0.06	0.14
Hispanic : Type 3					0.12	0.23
Black : Type 3					0.08	0.25
Asian : Type 3					0.37	0.19
Hispanic : Type 4					-0.06	0.16
Black : Type 4					-0.23	0.21
Asian : Type 4					-0.04	0.13
Hispanic : Type 5					0.16	0.27
Black : Type 5					-0.34	0.40
Asian : Type 5					0.29	0.28
Hispanic : Type 6					-0.14	0.33
Black : Type 6					0.31	0.35
Asian : Type 6					0.04	0.30
Hispanic : Type 7					0.00	0.28
Black : Type 7					-0.05	0.31
Asian : Type 7					0.10	0.19
Hispanic : Type 8					-0.41	0.43
Black : Type 8					-0.23	0.49
Asian : Type 8					0.26	0.48

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.00
Gender: female	0.00	0.08	0.01	0.13	0.00	0.06
Race/ethnicity:						
Hispanic			0.00	0.06	0.00	0.07
Black			0.00	0.03	0.00	0.02
Asian			0.02	0.86	0.01	0.06
Level 1						
Intercept/Intercept	0.75	0.86	0.74	0.86	0.73	0.85
Model Fit						
AIC	5573		5587		5614	
BIC	5783		5842		6045	
Deviance	5499		5497		5462	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting Active and Collaborative Learning for First Years

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.02	0.03	-0.22 *	0.09	-0.20 *	0.09	-0.35 **	0.12
Level 1 (Student)								
Age			0.05	0.07	0.05	0.07	0.07	0.07
Major			-0.24 **	0.10	-0.24 **	0.10	-0.21 *	0.10
Father's Education:								
Undergraduate			0.01	0.05	0.01	0.05	0.01	0.05
Graduate			0.03	0.06	0.03	0.06	0.02	0.06
Mother's Education:								
Undergraduate			0.10 *	0.05	0.10 *	0.05	0.11 *	0.04
Graduate			0.14 *	0.06	0.14 *	0.06	0.16 **	0.06
Residence			-0.03	0.04	-0.02	0.04	-0.03	0.04
Enrollment Status			0.16	0.08	0.17 *	0.08	0.17 *	0.08
Student Perception:								
Support for success			0.34 ***	0.02	0.34 ***	0.02	0.32 ***	0.02
Interpersonal environment			0.11 ***	0.03	0.11 ***	0.03	0.11 ***	0.03
Satisfaction			0.10 ***	0.03	0.10 ***	0.03	0.10 ***	0.03
Race/Ethnicity:								
Hispanic							0.27	0.14
Black							0.30	0.20
Asian							0.15	0.10
Level 2 (Institution)								
Campus Environment:								
Institutional Control			-0.01	0.05	0.00	0.05	0.02	0.05
Academic			0.37 ***	0.09	0.38 **	0.09	0.37 ***	0.09
Spiritual and Social			-0.31 **	0.12	-0.34	0.12	-0.31 **	0.12
Learning Outcome			0.39 **	0.13	0.40	0.14	0.37 **	0.13
Institutional Types:								
2					-0.06	0.06	-0.18	0.12
3					-0.06	0.09	0.07	0.16
4					-0.05	0.06	0.01	0.11
5					0.01	0.09	-0.02	0.16
6					0.01	0.13	-0.06	0.22
7					0.01	0.08	0.02	0.16

(continued)

Relationship between Institutional Factors and Success for Senior International Students

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
Fixed effects				
Intercept	-0.18	0.11	-0.08	0.11
Level 1 (Student)				
Control Variables ^b				
Race/Ethnicity:				
Hispanic	0.07	0.12	0.24 *	0.12
Black	0.30 *	0.15	0.04	0.16
Asian	0.03	0.10	0.15	0.10
Gender - female	-0.02	0.06	-0.03	0.06
Hispanic : female	0.01	0.09	0.00	0.09
Black : female	-0.04	0.11	-0.19	0.11
Asian : female	0.09	0.08	0.05	0.08
Level 2 (Institution)				
Institutional Control	0.06	0.08	0.16 *	0.08
Spiritual and Social	-0.06	0.32	0.33	0.33
Learning Outcome	0.41	0.35	-0.04	0.36
Institutional Types:				
2	-0.04	0.11	0.09	0.10
3	-0.14	0.15	-0.15	0.13
4	-0.01	0.10	0.06	0.09
5	-0.26	0.20	-0.34	0.19
6	-0.27	0.15	-0.15	0.16
7	-0.46 **	0.14	-0.29 *	0.14
8	-0.45	0.32	-0.28	0.30
Hispanic : Type 2	0.09	0.15	0.00	0.15
Black : Type 2	-0.07	0.20	0.21	0.20
Asian : Type 2	-0.12	0.12	-0.06	0.12
Hispanic : Type 3	0.21	0.22	0.20	0.22
Black : Type 3	-0.23	0.25	0.46	0.26
Asian : Type 3	0.07	0.17	0.23	0.17
Hispanic : Type 4	0.11	0.14	0.00	0.14
Black : Type 4	-0.26	0.19	0.10	0.19
Asian : Type 4	-0.08	0.11	-0.03	0.11
Hispanic : Type 5	0.42	0.23	0.30	0.24
Black : Type 5	0.22	0.37	0.37	0.37

(continued)

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
Asian : Type 5	0.42	0.24	0.52 *	0.24
Hispanic : Type 6	-0.30	0.29	0.25	0.29
Black : Type 6	0.23	0.31	0.64 *	0.32
Asian : Type 6	-0.17	0.26	-0.07	0.26
Hispanic : Type 7	0.39	0.25	0.46	0.26
Black : Type 7	0.42	0.29	0.46	0.29
Asian : Type 7	0.41 *	0.17	0.33	0.18
Hispanic : Type 8	0.50	0.37	0.42	0.37
Black : Type 8	0.17	0.41	0.18	0.42
Asian : Type 8	0.01	0.40	0.41	0.40
Hispanic : Institutional Control	-0.12	0.12	-0.25 *	0.11
Black : Institutional Control	-0.04	0.15	-0.22	0.15
Asian : Institutional Control	-0.01	0.10	-0.16	0.10
Hispanic : Spiritual and Social	0.23	0.50	0.34	0.50
Black : Spiritual and Social	0.18	0.57	0.69	0.63
Asian : Spiritual and Social	-0.42	0.39	-0.54	0.45
Hispanic : Learning and Development	-0.52	0.38	-0.35	0.54
Black : Learning and Development	-0.38	0.50	-0.49	0.64
Asian : Learning and Development	0.05	0.34	0.31	0.50
Random parameters				
Level 2	Var	SD	Var	SD
Intercept/intercept	0.03	0.17	0.00	0.00
Race/ethnicity:				
Hispanic	0.01	0.11	0.00	0.00
Black	0.00	0.07	0.00	0.00
Asian	0.02	0.13	0.00	0.00
Level 1				
Intercept/Intercept	0.48	0.70	0.57	0.72

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and

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

Estimates for Models Predicting Cumulative GPA for First Year

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	3.31 ***	0.09	3.34 ***	0.09	3.29 ***	0.09	3.34 ***	0.09
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.06 **	0.02	0.07	0.05	0.07	0.05
LAC			0.09 ***	0.02			-0.05	0.07
ACL			0.13 *	0.01			0.35	0.21
EEE			0.00	0.02			0.07	0.07
SFI			-0.15 *	0.06			-0.30	0.19
Race/Ethnicity:								
Hispanic	-0.17 **	0.07	-0.16 ***	0.04	-0.18 **	0.07	-0.19 **	0.07
Black	-0.27 ***	0.08	-0.26 ***	0.06	-0.26 ***	0.08	-0.28 ***	0.09
Asian	0.09	0.06	0.04	0.04	0.10	0.06	0.09	0.06
Gender - female	0.12 *	0.06	0.09 **	0.03	0.13 *	0.06	0.12 *	0.06
Hispanic : female	0.03	0.09			0.02	0.08	0.02	0.08
Black : female	0.00	0.11			0.00	0.11	0.02	0.11
Asian : female	-0.11	0.07			-0.11	0.07	-0.09	0.07
Hispanic : Satisfaction					0.05	0.05	0.05	0.05
Black : Satisfaction					0.16 ***	0.06	0.16 *	0.07
Asian : Satisfaction					0.05	0.04	0.05	0.04
Hispanic : LAC							0.10	0.07
Black : LAC							0.13	0.09
Asian : LAC							0.05	0.06
Hispanic : ACL							-0.08	0.19
Black : ACL							0.14	0.24
Asian : ACL							-0.29	0.18
Hispanic : EEE							-0.12	0.07
Black : EEE							-0.17	0.10
Asian : EEE							-0.06	0.06
Hispanic : SFI							0.06	0.17
Black : SFI							-0.18	0.22
Asian : SFI							0.27	0.16
Level 2 (Institution)								
Institutional Types:								
2	0.04	0.05	0.06	0.05	0.07	0.05	0.05	0.05

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	0.10	0.08	0.13	0.08	0.12	0.08	0.11	0.08
4	0.04	0.05	0.08	0.05	0.06	0.05	0.06	0.05
5	0.01	0.07	0.05	0.07	0.04	0.07	0.06	0.07
6	0.16	0.11	0.20	0.10	0.18	0.11	0.18	0.11
7	0.11	0.07	0.13	0.07	0.13	0.07	0.11	0.07
8	0.13	0.10	0.16	0.10	0.14	0.10	0.12	0.10
Satisfaction : Type 2					0.01	0.06	0.01	0.06
Satisfaction : Type 3					-0.09	0.08	-0.07	0.08
Satisfaction : Type 4					-0.06	0.05	-0.08	0.05
Satisfaction : Type 5					-0.14	0.08	-0.13	0.08
Satisfaction : Type 6					-0.17	0.11	-0.18	0.11
Satisfaction : Type 7					-0.11	0.07	-0.19	0.07
Satisfaction : Type 8					0.12	0.10	0.14	0.10
LAC : Type 2							0.11	0.08
LAC : Type 3							-0.04	0.11
LAC : Type 4							0.13	0.07
LAC : Type 5							0.11	0.10
LAC : Type 6							0.17	0.13
LAC : Type 7							0.11	0.09
LAC : Type 8							0.11	0.15
ACL : Type 2							-0.11	0.23
ACL : Type 3							0.23	0.30
ACL : Type 4							-0.18	0.21
ACL : Type 5							-0.46	0.27
ACL : Type 6							-0.22	0.46
ACL : Type 7							0.06	0.27
ACL : Type 8							-0.36	0.42
EEE : Type 2							0.01	0.08
EEE : Type 3							-0.15	0.11
EEE : Type 4							0.02	0.08
EEE : Type 5							0.05	0.11
EEE : Type 6							-0.07	0.17
EEE : Type 7							0.02	0.10
EEE : Type 8							0.01	0.16

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							-0.02	0.21
SFI : Type 3							-0.13	0.27
SFI : Type 4							0.09	0.19
SFI : Type 5							0.33	0.25
SFI : Type 6							0.13	0.39
SFI : Type 7							-0.01	0.24
SFI : Type 8							0.27	0.39
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.76	0.00	0.07	0.00	0.06	0.01	0.07
Satisfaction					0.01	0.07	0.00	0.06
LAC							0.00	0.03
ACL							0.07	0.26
EEE							0.01	0.12
SFI							0.05	0.23
Level 1								
Intercept/Intercept	0.43	0.65	0.42	0.65	0.42	0.64	0.39	0.62
Model Fit								
AIC	4044		4012		4037		4083	
BIC	4218		4196		4283		4676	
Deviance	3982		3946		3949		3871	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Cumulative GPA for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	3.26 ***	0.08	3.27 ***	0.08	3.23 ***	0.08	3.24 ***	0.08
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.08 **	0.02	0.09	0.05	0.08	0.05
LAC			0.04	0.02			0.09	0.06
ACL			0.04	0.03			-0.07	0.10
EEE			0.07 **	0.02			0.30 ***	0.07
SFI			-0.02	0.03			-0.14	0.09
ICI			-0.01	0.03			-0.01	0.09
Race/Ethnicity:								
Hispanic	-0.11	0.06	-0.15 **	0.06	-0.11	0.06	-0.15 **	0.06
Black	-0.21 **	0.07	-0.24 ***	0.07	-0.21 **	0.07	-0.25 ***	0.07
Asian	-0.04	0.05	-0.05	0.05	-0.02	0.05	-0.05	0.05
Gender - female	0.15 **	0.05	0.14 **	0.05	0.15 **	0.05	0.14 **	0.05
Hispanic : female	-0.08	0.08	-0.07	0.08	-0.09	0.08	-0.07	0.07
Black : female	-0.07	0.09	-0.05	0.09	-0.08	0.09	-0.06	0.09
Asian : female	0.01	0.07	0.01	0.06	0.00	0.06	0.01	0.06
Hispanic : Satisfaction					-0.03	0.04	-0.03	0.05
Black : Satisfaction					0.02	0.05	0.01	0.06
Asian : Satisfaction					0.05	0.04	0.03	0.04
Hispanic : LAC							-0.05	0.06
Black : LAC							-0.02	0.07
Asian : LAC							0.00	0.05
Hispanic : ACL							0.21	0.10
Black : ACL							0.12	0.12
Asian : ACL							-0.01	0.08
Hispanic : EEE							-0.05	0.06
Black : EEE							-0.03	0.08
Asian : EEE							-0.13 *	0.06
Hispanic : SFI							-0.09	0.10
Black : SFI							0.03	0.11
Asian : SFI							0.14	0.08
Hispanic : ICI							0.01	0.09
Black : ICI							0.13	0.12
Asian : ICI							-0.06	0.08

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Level 2 (Institution)								
Institutional Types:								
2	-0.05	0.04	-0.04	0.04	-0.03	0.04	-0.03	0.05
3	0.03	0.06	0.05	0.06	0.06	0.06	0.06	0.06
4	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
5	-0.03	0.07	0.01	0.07	0.00	0.07	0.01	0.08
6	0.00	0.08	0.02	0.08	0.03	0.08	0.06	0.09
7	-0.05	0.06	-0.02	0.06	-0.03	0.06	-0.04	0.06
8	0.08	0.10	0.10	0.10	0.08	0.11	0.19	0.12
Satisfaction : Type 2					-0.03	0.05	0.00	0.05
Satisfaction : Type 3					-0.04	0.06	-0.02	0.05
Satisfaction : Type 4					-0.04	0.04	-0.04	0.08
Satisfaction : Type 5					-0.07	0.08	-0.04	0.08
Satisfaction : Type 6					-0.12	0.10	-0.01	0.11
Satisfaction : Type 7					0.02	0.06	0.04	0.06
Satisfaction : Type 8					0.03	0.11	0.04	0.14
LAC : Type 2							0.00	0.06
LAC : Type 3							-0.13	0.09
LAC : Type 4							-0.05	0.06
LAC : Type 5							-0.08	0.10
LAC : Type 6							-0.07	0.12
LAC : Type 7							-0.07	0.08
LAC : Type 8							0.20	0.19
ACL : Type 2							0.05	0.11
ACL : Type 3							0.07	0.14
ACL : Type 4							0.00	0.10
ACL : Type 5							0.00	0.17
ACL : Type 6							0.60	0.28
ACL : Type 7							0.12	0.16
ACL : Type 8							0.05	0.32
EEE : Type 2							-0.19 **	0.07
EEE : Type 3							-0.24 *	0.10
EEE : Type 4							-0.28 ***	0.07
EEE : Type 5							-0.22	0.13

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
EEE : Type 6							-0.19	0.15
EEE : Type 7							-0.03	0.10
EEE : Type 8							-0.17	0.20
SFI : Type 2							0.10	0.11
SFI : Type 3							0.13	0.14
SFI : Type 4							0.21 *	0.10
SFI : Type 5							0.16	0.18
SFI : Type 6							-0.39	0.23
SFI : Type 7							0.00	0.14
SFI : Type 8							-0.21	0.26
ICI : Type 2							0.06	0.10
ICI : Type 3							-0.14	0.14
ICI : Type 4							0.04	0.09
ICI : Type 5							-0.06	0.17
ICI : Type 6							0.08	0.22
ICI : Type 7							-0.05	0.13
ICI : Type 8							-0.05	0.28
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.05
Satisfaction					0.00	0.06	0.01	0.08
LAC							0.02	0.08
ACL							0.01	0.07
EEE							0.01	0.08
SFI							0.01	0.04
ICI							0.01	0.04
Level 1								
Intercept/Intercept	0.36	0.60	0.35	0.59	0.35	0.59	0.32	0.57
Model Fit								
AIC		3959		3909		3961		3987
BIC		4146		4130		4223		4702
Deviance		3893		3831		3869		3735

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in General Education for First Year

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.06	0.10	-0.02	0.09	-0.21 *	0.10	0.01	0.09
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.23 ***	0.02	0.19 ***	0.05	0.27 ***	0.05
LAC			0.25 ***	0.02	0.04	0.07	0.26 ***	0.07
ACL			0.03	0.07	0.11	0.09	-0.01	0.20
EEE			-0.01	0.02			0.09	0.07
SFI			0.06	0.06			0.01	0.17
Race/Ethnicity:								
Hispanic	0.09	0.07	0.07	0.04	0.08	0.07	0.04	0.06
Black	0.16	0.09	0.09	0.06	0.19 *	0.09	0.06	0.06
Asian	0.11	0.06	0.07	0.04	0.12 *	0.06	0.06	0.06
Gender - female	0.05	0.06	0.04	0.03	0.03	0.06	0.03	0.06
Hispanic : female	0.05	0.09			0.06	0.09	0.04	0.08
Black : female	-0.12	0.12			-0.10	0.12	-0.04	0.11
Asian : female	-0.06	0.08			-0.03	0.08	0.00	0.07
Hispanic : Satisfaction					-0.05	0.05	-0.08	0.05
Black : Satisfaction					0.06	0.07	0.04	0.07
Asian : Satisfaction					-0.02	0.04	-0.07	0.04
Hispanic : LAC							-0.07	0.07
Black : LAC							-0.16	0.09
Asian : LAC							0.01	0.06
Hispanic : ACL							0.05	0.19
Black : ACL							0.45	0.24
Asian : ACL							0.09	0.18
Hispanic : EEE							-0.07	0.07
Black : EEE							-0.15	0.10
Asian : EEE							-0.08	0.06
Hispanic : SFI							0.13	0.17
Black : SFI							-0.22	0.21
Asian : SFI							-0.01	0.16
Level 2 (Institution)								
Institutional Types:								
2	-0.07	0.05	0.02	0.05	-0.02	0.05	0.02	0.05

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	-0.10	0.08	-0.01	0.07	-0.05	0.08	-0.01	0.07
4	-0.15 ***	0.05	-0.05	0.05	-0.10	0.05	-0.05	0.05
5	-0.10	0.07	0.03	0.06	-0.04	0.07	0.00	0.07
6	-0.30 **	0.11	-0.20 *	0.10	-0.23 *	0.11	-0.23 *	0.10
7	-0.14 *	0.07	-0.05	0.06	-0.08	0.07	-0.05	0.06
8	-0.25 **	0.10	-0.13	0.09	-0.16	0.10	-0.14	0.09
Satisfaction : Type 2					-0.04	0.06	-0.01	0.06
Satisfaction : Type 3					0.02	0.07	0.03	0.08
Satisfaction : Type 4					-0.02	0.05	0.01	0.05
Satisfaction : Type 5					0.00	0.08	0.03	0.08
Satisfaction : Type 6					0.15	0.11	0.13	0.11
Satisfaction : Type 7					-0.01	0.07	0.02	0.07
Satisfaction : Type 8					0.08	0.09	0.06	0.10
LAC : Type 2							-0.02	0.09
LAC : Type 3							-0.07	0.12
LAC : Type 4							0.15	0.08
LAC : Type 5							0.02	0.11
LAC : Type 6							-0.15	0.14
LAC : Type 7							0.01	0.10
LAC : Type 8							-0.16	0.16
ACL : Type 2							0.15	0.21
ACL : Type 3							-0.09	0.28
ACL : Type 4							-0.10	0.19
ACL : Type 5							-0.16	0.25
ACL : Type 6							0.65	0.43
ACL : Type 7							-0.60 *	0.25
ACL : Type 8							0.36	0.41
EEE : Type 2							-0.15 *	0.07
EEE : Type 3							-0.10	0.11
EEE : Type 4							0.02	0.07
EEE : Type 5							-0.13	0.10
EEE : Type 6							-0.01	0.16
EEE : Type 7							0.01	0.09
EEE : Type 8							0.09	0.15

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							-0.08	0.19
SFI : Type 3							0.20	0.25
SFI : Type 4							-0.06	0.17
SFI : Type 5							0.20	0.23
SFI : Type 6							-0.42	0.37
SFI : Type 7							0.52 *	0.22
SFI : Type 8							-0.28	0.37
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
Satisfaction					0.00	0.03	0.00	0.07
LAC							0.02	0.13
ACL							0.01	0.09
EEE							0.00	0.06
SFI							0.00	0.04
Level 1								
Intercept/Intercept	0.50	0.71	0.41	0.64	0.52	0.72	0.39	0.62
Model Fit								
AIC	4342		3947		4227		4021	
BIC	4516		4132		4473		4614	
Deviance	4280		3881		4139		3809	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in General Education for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.02	0.06	-0.10	0.10	-0.19	0.10	-0.08	0.09
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.28 ***	0.03	0.37 ***	0.06	0.34 ***	0.05
LAC			0.18 ***	0.02			0.18 **	0.06
ACL			0.08	0.04			0.42	0.11
EEE			-0.03	0.03			0.07	0.08
SFI			-0.13 **	0.04			-0.31	0.11
ICI			0.20 ***	0.04			0.27 *	0.11
Race/Ethnicity:								
Hispanic	0.30 **	0.08	0.13	0.07	0.23 **	0.08	0.12	0.07
Black	0.23 **	0.09	0.14	0.08	0.22 **	0.09	0.14	0.08
Asian	0.00	0.06	0.01	0.06	0.03	0.06	0.00	0.06
Gender - female	0.02	0.06	-0.05	0.06	0.02	0.06	-0.05	0.06
Hispanic : female	0.01	0.10	0.06	0.09	0.00	0.10	0.07	0.09
Black : female	-0.05	0.12	0.04	0.11	-0.05	0.12	0.05	0.11
Asian : female	0.06	0.08	0.09	0.08	0.05	0.08	0.10	0.07
Hispanic : Satisfaction					-0.05	0.05	-0.03	0.05
Black : Satisfaction					0.01	0.07	0.05	0.07
Asian : Satisfaction					-0.04	0.04	-0.05	0.04
Hispanic : LAC							0.05	0.07
Black : LAC							0.03	0.08
Asian : LAC							0.08	0.05
Hispanic : ACL							0.01	0.11
Black : ACL							-0.06	0.13
Asian : ACL							-0.07	0.10
Hispanic : EEE							-0.18 *	0.07
Black : EEE							-0.13	0.10
Asian : EEE							-0.10	0.07
Hispanic : SFI							0.08	0.11
Black : SFI							0.03	0.13
Asian : SFI							0.04	0.10
Hispanic : ICI							-0.14	0.10
Black : ICI							-0.28 *	0.14
Asian : ICI							0.04	0.10
Level 2 (Institution)								
Institutional Types:								
2	-0.50	0.05	0.03	0.05	0.01	0.06	0.02	0.05

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	-0.01	0.07	-0.01	0.07	-0.01	0.08	-0.02	0.07
4	-0.05	0.05	0.03	0.05	0.02	0.06	0.05	0.05
5	-0.05	0.09	0.06	0.08	0.06	0.10	0.10	0.09
6	-0.29 **	0.10	-0.15	0.09	-0.20	0.11	-0.16	0.10
7	-0.06	0.07	0.05	0.07	0.03	0.08	0.04	0.08
8	-0.02	0.13	-0.08	0.12	-0.22	0.14	-0.10	0.14
Satisfaction : Type 2					-0.03	0.06	-0.03	0.06
Satisfaction : Type 3					0.02	0.08	0.00	0.07
Satisfaction : Type 4					-0.11 *	0.06	-0.10	0.05
Satisfaction : Type 5					-0.14	0.10	-0.02	0.10
Satisfaction : Type 6					-0.10	0.13	-0.12	0.13
Satisfaction : Type 7					-0.08	0.08	-0.04	0.07
Satisfaction : Type 8					0.14	0.14	0.02	0.17
LAC : Type 2							-0.05	0.07
LAC : Type 3							-0.08	0.10
LAC : Type 4							-0.01	0.07
LAC : Type 5							-0.04	0.11
LAC : Type 6							0.03	0.13
LAC : Type 7							-0.13	0.10
LAC : Type 8							0.09	0.23
ACL : Type 2							-0.05	0.12
ACL : Type 3							-0.22	0.17
ACL : Type 4							-0.16	0.12
ACL : Type 5							-0.11	0.20
ACL : Type 6							-0.17	0.26
ACL : Type 7							0.03	0.18
ACL : Type 8							-0.41	0.37
EEE : Type 2							-0.10	0.08
EEE : Type 3							0.05	0.11
EEE : Type 4							0.00	0.07
EEE : Type 5							0.02	0.14
EEE : Type 6							-0.19	0.17
EEE : Type 7							-0.03	0.11
EEE : Type 8							0.32	0.23

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							0.09	0.12
SFI : Type 3							0.26	0.16
SFI : Type 4							0.12	0.11
SFI : Type 5							-0.06	0.21
SFI : Type 6							0.40	0.26
SFI : Type 7							0.03	0.16
SFI : Type 8							0.14	0.31
ICI : Type 2							-0.01	0.12
ICI : Type 3							0.01	0.16
ICI : Type 4							0.01	0.11
ICI : Type 5							-0.25	0.20
ICI : Type 6							0.00	0.27
ICI : Type 7							-0.23	0.15
ICI : Type 8							0.33	0.34
	Random parameters							
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.07	0.00	0.00	0.01	0.08	0.00	0.05
Satisfaction					0.01	0.08	0.00	0.06
LAC							0.01	0.07
ACL							0.04	0.21
EEE							0.01	0.08
SFI							0.02	0.13
ICI							0.01	0.09
Level 1								
Intercept/Intercept	0.57	0.75	0.46	0.68	0.53	0.73	0.44	0.67
Model Fit								
AIC	4987		4548		4900		4643	
BIC	5174		4769		5161		5359	
Deviance	4921		4470		4808		4391	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in Personal and Social Development for First Year

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.18	0.11	-0.16	0.09	-0.21 *	0.10	-0.11	0.10
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.20 ***	0.02	0.19 ***	0.06	0.17 **	0.05
LAC			0.18 ***	0.03			0.14	0.07
ACL			-0.01	0.07			-0.08	0.21
EEE			0.07 **	0.03			0.17 *	0.07
SFI			0.13 *	0.06			0.19	0.19
Race/Ethnicity:								
Hispanic	0.05	0.07	0.05	0.05	0.04	0.07	-0.02	0.69
Black	0.09	0.10	0.02	0.06	0.11	0.09	0.02	0.09
Asian	0.15 *	0.07	0.14 ***	0.04	0.16 *	0.06	0.09	0.06
Gender - female	-0.02	0.06	0.03	0.03	-0.03	0.06	-0.03	0.06
Hispanic : female	0.13	0.10			0.13	0.09	0.11	0.09
Black : female	-0.08	0.13			-0.07	0.12	-0.02	0.12
Asian : female	0.04	0.08			0.06	0.08	0.08	0.08
Hispanic : Satisfaction					0.01	0.05	-0.02	0.05
Black : Satisfaction					0.07	0.07	0.04	0.07
Asian : Satisfaction					0.06	0.05	0.02	0.05
Hispanic : LAC							-0.03	0.08
Black : LAC							-0.15	0.10
Asian : LAC							0.05	0.07
Hispanic : ACL							0.02	0.20
Black : ACL							0.42	0.25
Asian : ACL							0.01	0.19
Hispanic : EEE							0.03	0.07
Black : EEE							-0.09	0.10
Asian : EEE							0.00	0.06
Hispanic : SFI							0.02	0.18
Black : SFI							-0.25	0.23
Asian : SFI							-0.05	0.17
Level 2 (Institution)								
Institutional Types:								
2	0.01	0.05	0.07	0.06	0.06	0.06	0.10 *	0.05

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	-0.03	0.08	0.06	0.08	0.01	0.08	0.05	0.07
4	-0.06	0.05	0.02	0.06	-0.01	0.05	0.04	0.05
5	0.02	0.07	0.12	0.08	0.08	0.08	0.16 *	0.07
6	-0.25 *	0.11	-0.19	0.12	-0.19	0.11	-0.20	0.11
7	-0.12	0.07	-0.06	0.08	-0.09	0.07	-0.03	0.07
8	-0.04	0.10	0.06	0.11	0.04	0.11	0.10	0.10
Satisfaction : Type 2					0.01	0.06	0.02	0.06
Satisfaction : Type 3					0.10	0.08	0.05	0.08
Satisfaction : Type 4					-0.01	0.06	0.01	0.05
Satisfaction : Type 5					-0.03	0.08	-0.02	0.08
Satisfaction : Type 6					0.00	0.11	-0.09	0.12
Satisfaction : Type 7					0.06	0.07	0.06	0.07
Satisfaction : Type 8					0.08	0.10	0.07	0.10
LAC : Type 2							0.03	0.08
LAC : Type 3							-0.08	0.11
LAC : Type 4							0.16 *	0.08
LAC : Type 5							0.21 *	0.10
LAC : Type 6							0.06	0.14
LAC : Type 7							0.01	0.10
LAC : Type 8							-0.16	0.15
ACL : Type 2							0.21	0.22
ACL : Type 3							0.33	0.30
ACL : Type 4							0.03	0.21
ACL : Type 5							-0.07	0.27
ACL : Type 6							0.13	0.46
ACL : Type 7							-0.46	0.27
ACL : Type 8							0.48	0.43
EEE : Type 2							-0.21 **	0.08
EEE : Type 3							-0.17	0.11
EEE : Type 4							-0.10	0.07
EEE : Type 5							-0.17	0.10
EEE : Type 6							-0.11	0.17
EEE : Type 7							-0.08	0.10
EEE : Type 8							-0.12	0.15

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							-0.16	0.20
SFI : Type 3							0.00	0.27
SFI : Type 4							-0.15	0.19
SFI : Type 5							-0.06	0.25
SFI : Type 6							0.10	0.40
SFI : Type 7							0.45	0.24
SFI : Type 8							-0.36	0.39
	Random parameters							
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.01	0.10	0.00	0.06	0.00	0.00
Satisfaction					0.00	0.00	0.00	0.00
LAC							0.00	0.00
ACL							0.00	0.00
EEE							0.00	0.00
SFI							0.00	0.00
Level 1								
Intercept/Intercept	0.55	0.74	0.46	0.68	0.52	0.72	0.45	0.67
Model Fit								
AIC	4536		4200		4461		4292	
BIC	4710		4385		4707		4885	
Deviance	4474		4134		4373		4080	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in Personal and Social Development for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.19	0.11	-0.13	0.10	-0.24 *	0.11	-0.12	0.10
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.22 ***	0.03	0.22 ***	0.06	0.19 **	0.06
LAC			0.12 ***	0.03			0.04	0.07
ACL			-0.12	0.04			0.30	0.12
EEE			0.06 *	0.03			0.11	0.08
SFI			-0.12	0.04			-0.10	0.12
ICI			0.29	0.04			0.22	0.12
Race/Ethnicity:								
Hispanic	0.30 ***	0.08	0.21 **	0.08	0.31 ***	0.08	0.18 *	0.08
Black	0.27 **	0.09	0.19 *	0.09	0.26 **	0.10	0.18 *	0.09
Asian	0.18 **	0.07	0.17 **	0.07	0.21 **	0.07	0.16 **	0.07
Gender - female	0.01	0.07	-0.04	0.06	0.02	0.07	-0.04	0.07
Hispanic : female	-0.02	0.10	0.02	0.10	-0.04	0.10	0.01	0.10
Black : female	-0.22	0.13	-0.16	0.12	-0.21	0.13	-0.13	0.12
Asian : female	0.05	0.09	0.06	0.08	0.04	0.09	0.07	0.08
Hispanic : Satisfaction					-0.02	0.06	-0.05	0.06
Black : Satisfaction					0.04	0.07	0.07	0.07
Asian : Satisfaction					-0.01	0.05	0.00	0.05
Hispanic : LAC							0.12	0.07
Black : LAC							0.16	0.09
Asian : LAC							0.07	0.06
Hispanic : ACL							0.01	0.12
Black : ACL							-0.28	0.15
Asian : ACL							-0.09	0.11
Hispanic : EEE							-0.11	0.08
Black : EEE							-0.10	0.11
Asian : EEE							-0.02	0.07
Hispanic : SFI							0.08	0.13
Black : SFI							0.13	0.15
Asian : SFI							-0.02	0.11
Hispanic : ICI								
Black : ICI								
Asian : ICI								
Level 2 (Institution)								
Institutional Types:								
2	0.05	0.06	0.10	0.05	0.10	0.06	0.10	0.06

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	-0.01	0.08	0.04	0.08	0.04	0.08	0.01	0.08
4	0.05	0.05	0.10	0.05	0.09	0.05	0.08	0.05
5	-0.06	0.09	0.03	0.09	0.00	0.10	-0.01	0.10
6	-0.14	0.11	-0.05	0.10	-0.09	0.11	-0.04	0.11
7	0.01	0.08	0.10	0.08	0.05	0.08	0.10	0.08
8	-0.06	0.14	0.03	0.13	-0.06	0.14	0.01	0.15
Satisfaction : Type 2					0.09	0.06	0.13	0.06
Satisfaction : Type 3					0.06	0.08	0.03	0.08
Satisfaction : Type 4					-0.05	0.05	0.00	0.06
Satisfaction : Type 5					0.06	0.10	0.16	0.11
Satisfaction : Type 6					0.00	0.13	0.05	0.14
Satisfaction : Type 7					-0.02	0.08	0.01	0.08
Satisfaction : Type 8					0.17	0.15	0.20	0.18
LAC : Type 2							0.01	0.08
LAC : Type 3							0.02	0.11
LAC : Type 4							0.05	0.08
LAC : Type 5							-0.05	0.13
LAC : Type 6							0.26	0.14
LAC : Type 7							-0.07	0.11
LAC : Type 8							0.05	0.26
ACL : Type 2							-0.09	0.13
ACL : Type 3							0.06	0.17
ACL : Type 4							-0.06	0.12
ACL : Type 5							0.19	0.21
ACL : Type 6							-0.22	0.27
ACL : Type 7							0.21	0.19
ACL : Type 8							-0.34	0.41
EEE : Type 2							-0.05	0.09
EEE : Type 3							-0.03	0.12
EEE : Type 4							-0.03	0.08
EEE : Type 5							-0.01	0.16
EEE : Type 6							0.02	0.19
EEE : Type 7							0.10	0.12
EEE : Type 8							0.07	0.25

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							0.02	0.13
SFI : Type 3							-0.03	0.18
SFI : Type 4							-0.06	0.12
SFI : Type 5							-0.31	0.23
SFI : Type 6							0.05	0.29
SFI : Type 7							-0.24	0.17
SFI : Type 8							0.12	0.34
ICI : Type 2							0.20	0.13
ICI : Type 3							0.18	0.18
ICI : Type 4							0.09	0.12
ICI : Type 5							0.31	0.22
ICI : Type 6							-0.26	0.29
ICI : Type 7							0.05	0.16
ICI : Type 8							0.37	0.37
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Satisfaction					0.00	0.00	0.00	0.03
LAC							0.01	0.09
ACL							0.00	0.02
EEE							0.00	0.01
SFI							0.00	0.01
ICI							0.00	0.04
Level 1								
Intercept/Intercept	0.65	0.80	0.59	0.77	0.63	0.79	0.55	0.74
Model Fit								
AIC	5256		5008		5221		5121	
BIC	5443		5229		5482		5837	
Deviance	5190		4930		5129		4869	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in Practical Competence for First Year

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.05	0.10	-0.01	0.09	-0.08	0.10	0.02	0.09
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.22 ***	0.02	0.27 ***	0.05	0.24 ***	0.05
LAC			0.22 ***	0.02			0.27 ***	0.07
ACL			0.06	0.06			0.03	0.20
EEE			0.00	0.02			0.07	0.07
SFI			0.05	0.06			-0.01	0.17
Race/Ethnicity:								
Hispanic	0.09	0.07	0.07	0.04	0.08	0.07	0.03	0.06
Black	0.19 *	0.09	0.10	0.06	0.21 *	0.09	0.12	0.08
Asian	0.15 *	0.06	0.11 ***	0.04	0.15 **	0.06	0.09	0.06
Gender - female	0.03	0.06	0.03	0.03	0.01	0.06	0.01	0.05
Hispanic : female	0.06	0.09			0.07	0.09	0.06	0.08
Black : female	-0.14	0.12			-0.12	0.12	-0.06	0.11
Asian : female	-0.03	0.08			0.00	0.08	0.02	0.07
Hispanic : Satisfaction					-0.05	0.05	-0.07	0.05
Black : Satisfaction					0.04	0.07	0.02	0.07
Asian : Satisfaction					-0.04	0.04	-0.09	0.04
Hispanic : LAC							-0.11	0.07
Black : LAC							-0.17	0.09
Asian : LAC							0.01	0.06
Hispanic : ACL							0.03	0.19
Black : ACL							0.41	0.23
Asian : ACL							0.04	0.17
Hispanic : EEE							-0.02	0.07
Black : EEE							-0.09	0.10
Asian : EEE							-0.05	0.06
Hispanic : SFI							0.14	0.17
Black : SFI							-0.20	0.21
Asian : SFI							0.01	0.16
Level 2 (Institution)								
Institutional Types:								
2	-0.10 *	0.05	-0.02	0.05	-0.05	0.05	-0.01	0.05

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	-0.14	0.08	-0.05	0.07	-0.10	0.07	-0.05	0.07
4	-0.17 ***	0.05	-0.07	0.05	-0.12 **	0.05	-0.07	0.05
5	-0.15 *	0.07	-0.03	0.06	-0.09	0.07	-0.04	0.07
6	-0.34 **	0.11	-0.25 **	0.10	-0.27 **	0.10	-0.28 **	0.10
7	-0.24 ***	0.07	-0.16 **	0.06	-0.18 **	0.07	-0.14 *	0.06
8	-0.27 **	0.10	-0.15	0.09	-0.19 *	0.10	-0.16	0.09
Satisfaction : Type 2					-0.03	0.05	0.00	0.06
Satisfaction : Type 3					0.06	0.07	0.07	0.08
Satisfaction : Type 4					0.00	0.05	0.03 *	0.05
Satisfaction : Type 5					-0.01	0.07	-0.01	0.08
Satisfaction : Type 6					0.19	0.11	0.14	0.11
Satisfaction : Type 7					0.00	0.07	0.03	0.07
Satisfaction : Type 8					0.10	0.09	0.09	0.10
LAC : Type 2							-0.02	0.08
LAC : Type 3							-0.08	0.11
LAC : Type 4							0.09	0.08
LAC : Type 5							0.00	0.10
LAC : Type 6							-0.17	0.14
LAC : Type 7							-0.05	0.10
LAC : Type 8							-0.22	0.15
ACL : Type 2							0.18	0.21
ACL : Type 3							-0.03	0.28
ACL : Type 4							-0.04	0.19
ACL : Type 5							-0.11	0.25
ACL : Type 6							0.74	0.43
ACL : Type 7							-0.55 *	0.25
ACL : Type 8							0.28	0.40
EEE : Type 2							-0.13	0.07
EEE : Type 3							-0.09	0.11
EEE : Type 4							0.02	0.07
EEE : Type 5							-0.10	0.10
EEE : Type 6							-0.06	0.16
EEE : Type 7							-0.01	0.09
EEE : Type 8							0.08	0.15

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							-0.12	0.19
SFI : Type 3							0.18	0.25
SFI : Type 4							-0.08	0.17
SFI : Type 5							0.19	0.23
SFI : Type 6							-0.39	0.37
SFI : Type 7							0.55 *	0.22
SFI : Type 8							-0.18	0.37
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Satisfaction							0.01	0.08
LAC							0.01	0.11
ACL							0.01	0.11
EEE							0.00	0.06
SFI							0.01	0.08
Level 1								
Intercept/Intercept	0.49	0.70	0.40	0.63	0.46	0.68	0.38	0.62
Model Fit								
AIC	4312		3917		4203		3991	
BIC	4486		4102		4450		4584	
Deviance	4250		3851		4115		3779	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in Practical Competence for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.19	0.10	-0.13	0.09	-0.21 *	0.10	-0.11	0.09
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.24 ***	0.03	0.32 ***	0.05	0.28 ***	0.05
LAC			0.16 ***	0.02			0.19 **	0.06
ACL			0.14 **	0.06			0.36	0.10
EEE			-0.04	0.03			0.02	0.07
SFI			-0.13 **	0.04			-0.23	0.10
ICI			0.12 **	0.04				
Race/Ethnicity:								
Hispanic	0.15 *	0.07	0.05	0.07	0.14 *	0.07	0.05	0.07
Black	0.24 **	0.08	0.15 *	0.08	0.24 **	0.08	0.15 *	0.08
Asian	0.02	0.06	0.03	0.06	0.05	0.06	0.03	0.06
Gender - female	-0.02	0.06	-0.08	0.06	-0.02	0.06	-0.07	0.06
Hispanic : female	0.02	0.09	0.07	0.08	-0.01	0.09	0.07	0.08
Black : female	-0.05	0.11	0.03	0.10	-0.05	0.11	0.03	0.10
Asian : female	0.08	0.08	0.12	0.07	0.07	0.08	0.11	0.07
Hispanic : Satisfaction					-0.02	0.05	-0.02	0.05
Black : Satisfaction					-0.02	0.06	0.01	0.06
Asian : Satisfaction					-0.05	0.04	-0.05	0.04
Hispanic : LAC							0.06	0.06
Black : LAC							0.03	0.08
Asian : LAC							0.05	0.05
Hispanic : ACL							-0.01	0.11
Black : ACL							-0.02	0.13
Asian : ACL							0.00	0.09
Hispanic : EEE							-0.08	0.07
Black : EEE							-0.12	0.09
Asian : EEE							-0.05	0.07
Hispanic : SFI							0.05	0.11
Black : SFI							0.02	0.13
Asian : SFI							-0.11	0.10
Hispanic : ICI							-0.23	0.13
Black : ICI							-0.06	0.09
Asian : ICI								
Level 2 (Institution)								
Institutional Types:								
2	-0.06	0.06	0.00	0.05	-0.01	0.05	0.01	0.05

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	-0.15	0.08	-0.07	0.06	-0.10	0.07	-0.02	0.07
4	-0.05	0.05	0.01	0.04	-0.01	0.05	0.04	0.05
5	0.00	0.06	0.09	0.08	0.08	0.09	0.15	0.09
6	-0.32 **	0.10	-0.20 *	0.10	-0.25 *	0.10	-0.20	0.10
7	-0.15 *	0.07	-0.05	0.07	-0.07	0.07	-0.07	0.08
8	-0.23	0.12	-0.10	0.11	-0.26	0.13	-0.14	0.13
Satisfaction : Type 2					-0.01	0.06	0.00	0.05
Satisfaction : Type 3					-0.01	0.07	-0.01	0.07
Satisfaction : Type 4					-0.09	0.05	-0.05	0.05
Satisfaction : Type 5					-0.16	0.09	-0.07	0.09
Satisfaction : Type 6					-0.16	0.12	-0.16	0.12
Satisfaction : Type 7					-0.08	0.07	-0.05	0.07
Satisfaction : Type 8					0.16	0.13	0.03	0.16
LAC : Type 2							-0.11	0.07
LAC : Type 3							-0.03	0.10
LAC : Type 4							-0.08	0.11
LAC : Type 5							-0.08	0.11
LAC : Type 6							-0.03	0.13
LAC : Type 7							-0.12	0.10
LAC : Type 8							0.04	0.22
ACL : Type 2							0.03	0.11
ACL : Type 3							-0.32	0.15
ACL : Type 4							-0.08	0.10
ACL : Type 5							-0.04	0.18
ACL : Type 6							0.03	0.24
ACL : Type 7							-0.05	0.16
ACL : Type 8							-0.38	0.35
EEE : Type 2							-0.11	0.08
EEE : Type 3							0.08	0.11
EEE : Type 4							0.02	0.07
EEE : Type 5							-0.05	0.14
EEE : Type 6							-0.20	0.16
EEE : Type 7							0.04	0.10
EEE : Type 8							0.28	0.22

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							0.05	0.11
SFI : Type 3							0.29	0.15
SFI : Type 4							0.07	0.10
SFI : Type 5							-0.02	0.20
SFI : Type 6							0.22	0.25
SFI : Type 7							0.11	0.15
SFI : Type 8							0.18	0.29
ICI : Type 2							0.03	0.11
ICI : Type 3							0.00	0.15
ICI : Type 4							0.00	0.10
ICI : Type 5							-0.22	0.19
ICI : Type 6							-0.03	0.25
ICI : Type 7							-0.23	0.14
ICI : Type 8							0.40	0.31
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.09	0.01	0.08	0.01	0.10	0.01	0.08
Satisfaction					0.00	0.06	0.00	0.07
LAC							0.01	0.09
ACL							0.04	0.01
EEE							0.00	0.04
SFI							0.02	0.13
ICI							0.00	0.06
Level 1								
Intercept/Intercept	0.50	0.70	0.42	0.65	0.47	0.69	0.39	0.63
Model Fit								
AIC	4707		4340		4638		4436	
BIC	4895		4561		4899		5151	
Deviance	4641		4262		4546		4184	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL= active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in Civic and Democratic Development for First Year

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
	Fixed effects							
Intercept	-0.20	0.10	-0.14	0.09	-0.22 *	0.10	-0.12	0.10
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.18 ***	0.02	0.16 **	0.05	0.14 **	0.05
LAC			0.10 ***	0.03			0.05	0.07
ACL			-0.02	0.07			-0.06	0.21
EEE			0.11 ***	0.02			0.18 **	0.07
SFI			0.15 *	0.06			0.21	0.19
Race/Ethnicity:								
Hispanic	0.10	0.07	0.05	0.05	0.09	0.07	0.03	0.07
Black	0.15	0.09	0.02	0.06	0.16	0.09	0.09	0.09
Asian	0.19 **	0.06	0.15	0.04	0.20 **	0.06	0.14 *	0.06
Gender - female	0.02	0.06			0.08	0.05	0.02	0.06
Hispanic : female	0.04	0.09			0.05	0.09	0.03	0.09
Black : female	-0.17	0.12			-0.15	0.12	-0.13	0.12
Asian : female	-0.01	0.08			0.02	0.08	0.02	0.08
Hispanic : Satisfaction					-0.02	0.05	-0.04	0.05
Black : Satisfaction					0.10	0.07	0.09	0.07
Asian : Satisfaction					0.03	0.04	0.00	0.04
Hispanic : LAC							0.00	0.07
Black : LAC							-0.12	0.09
Asian : LAC							0.10	0.06
Hispanic : ACL							0.08	0.20
Black : ACL							0.33	0.25
Asian : ACL							-0.09	0.18
Hispanic : EEE							0.02	0.07
Black : EEE							-0.05	0.10
Asian : EEE							0.02	0.06
Hispanic : SFI							-0.08	0.18
Black : SFI							-0.22	0.22
Asian : SFI							0.00	0.17
Level 2 (Institution)								
Institutional Types:								
2	0.01	0.06	0.06	0.06	0.06	0.06	0.07	0.06

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
3	0.01	0.09	0.07	0.09	0.04	0.09	0.06	0.09
4	-0.07	0.06	-0.02	0.06	-0.04	0.05	-0.01	0.06
5	0.03	0.08	0.10	0.09	0.08	0.08	0.13	0.09
6	-0.23 *	0.12	-0.19	0.12	-0.18	0.12	-0.21	0.12
7	-0.13	0.08	-0.09	0.08	-0.10	0.08	-0.08	0.08
8	-0.08	0.11	-0.01	0.11	-0.02	0.11	0.05	0.11
Satisfaction : Type 2					0.04	0.06	0.07	0.06
Satisfaction : Type 3					0.09	0.08	0.03	0.08
Satisfaction : Type 4					0.00	0.05	0.04	0.05
Satisfaction : Type 5					-0.04	0.08	0.00	0.08
Satisfaction : Type 6					-0.03	0.11	-0.12	0.11
Satisfaction : Type 7					0.09	0.07	0.09	0.07
Satisfaction : Type 8					0.13	0.10	0.12	0.10
LAC : Type 2							-0.01	0.08
LAC : Type 3							-0.13	0.11
LAC : Type 4							0.10	0.08
LAC : Type 5							0.16	0.10
LAC : Type 6							0.16	0.14
LAC : Type 7							-0.03	0.10
LAC : Type 8							-0.17	0.15
ACL : Type 2							0.17	0.22
ACL : Type 3							0.37	0.30
ACL : Type 4							0.06	0.21
ACL : Type 5							-0.12	0.27
ACL : Type 6							0.19	0.46
ACL : Type 7							-0.31	0.27
ACL : Type 8							0.14	0.43
EEE : Type 2							-0.16 *	0.08
EEE : Type 3							-0.21	0.11
EEE : Type 4							-0.07	0.07
EEE : Type 5							-0.08	0.10
EEE : Type 6							-0.05	0.17
EEE : Type 7							-0.10	0.10
EEE : Type 8							-0.28	0.15

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							-0.13	0.20
SFI : Type 3							0.00	0.26
SFI : Type 4							-0.17	0.18
SFI : Type 5							-0.04	0.24
SFI : Type 6							-0.07	0.40
SFI : Type 7							0.37	0.24
SFI : Type 8							0.11	0.40
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.09	0.01	0.12	0.01	0.10	0.01	0.12
Satisfaction					0.00	0.01	0.00	0.03
LAC							0.00	0.05
ACL							0.02	0.16
EEE							0.00	0.05
SFI							0.01	0.11
Level 1								
Intercept/Intercept	0.51	0.71	0.44	0.66	0.49	0.70	0.42	0.65
Model Fit								
AIC	4403		4131		4345		4217	
BIC	4576		4316		4591		4810	
Deviance	4341		4065		4257		4005	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Estimates for Models Predicting Gains in Civic and Democratic Development for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	-0.10	0.10	-0.07	0.09	-0.13	0.10	-0.07	0.09
Level 1 (Student)								
Control Variables ^b								
Satisfaction			0.15 ***	0.03	0.12 *	0.05	0.10	0.05
LAC			0.07 **	0.02			-0.04	0.06
ACL			-0.17 **	0.06			-0.03	0.17
EEE			0.11 ***	0.03			0.12	0.08
SFI			0.01	0.04			0.07	0.11
ICI			0.24 ***	0.04			0.16	0.11
Race/Ethnicity:								
Hispanic	0.25 **	0.07	0.18 **	0.07	0.26 ***	0.07	0.15 *	0.07
Black	0.17 *	0.08	0.13	0.08	0.17 *	0.09	0.13	0.08
Asian	0.16 **	0.06	0.15 *	0.06	0.18 **	0.06	0.14 *	0.06
Gender - female	-0.02	0.06	-0.05	0.06	-0.02	0.06	-0.05	0.06
Hispanic : female	-0.01	0.09	0.01	0.09	-0.02	0.09	0.01	0.09
Black : female	-0.19	0.11	-0.15	0.11	-0.18	0.11	-0.14	0.11
Asian : female	0.05	0.08	0.04	0.08	0.04	0.08	0.04	0.08
Hispanic : Satisfaction					0.02	0.05	-0.02	0.06
Black : Satisfaction					0.04	0.06	0.09	0.07
Asian : Satisfaction					0.02	0.04	0.02	0.05
Hispanic : LAC							0.08	0.07
Black : LAC							0.16 *	0.08
Asian : LAC							0.07	0.06
Hispanic : ACL							-0.07	0.17
Black : ACL							-0.16	0.21
Asian : ACL							-0.06	0.15
Hispanic : EEE							-0.08	0.08
Black : EEE							-0.03	0.10
Asian : EEE							0.03	0.07
Hispanic : SFI							0.09	0.12
Black : SFI							0.07	0.14
Asian : SFI							-0.03	0.10
Hispanic : ICI							0.08	0.11
Black : ICI							-0.11	0.14
Asian : ICI							-0.04	0.10

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Level 2 (Institution)								
Institutional Types:								
2	0.09 **	0.03	0.12 *	0.05	0.12 *	0.05	0.11 *	0.05
3	0.01	0.07	0.06	0.07	0.05	0.07	0.01	0.07
4	0.06	0.05	0.09	0.05	0.08	0.05	0.07	0.05
5	-0.03	0.09	0.03	0.08	0.00	0.09	-0.02	0.09
6	-0.05	0.10	0.00	0.10	0.01	0.13	0.02	0.10
7	-0.04	0.07	0.04	0.07	0.01	0.07	0.04	0.07
8	-0.02	0.12	0.02	0.12	-0.03	0.13	-0.01	0.14
Satisfaction : Type 2					0.08	0.05	0.10	0.06
Satisfaction : Type 3					0.03	0.07	-0.02	0.07
Satisfaction : Type 4					-0.03	0.05	0.01	0.05
Satisfaction : Type 5					0.06	0.09	0.13	0.10
Satisfaction : Type 6					0.01	0.12	0.08	0.13
Satisfaction : Type 7					0.00	0.07	0.01	0.07
Satisfaction : Type 8					0.11	0.13	0.21	0.16
LAC : Type 2							0.03	0.07
LAC : Type 3							0.06	0.10
LAC : Type 4							0.09	0.06
LAC : Type 5							0.00	0.11
LAC : Type 6							0.26	0.14
LAC : Type 7							-0.01	0.09
LAC : Type 8							-0.12	0.23
ACL : Type 2							-0.19	0.18
ACL : Type 3							0.09	0.25
ACL : Type 4							-0.07	0.17
ACL : Type 5							-0.07	0.30
ACL : Type 6							0.17	0.26
ACL : Type 7							0.15	0.24
ACL : Type 8							-0.36	0.53
EEE : Type 2							-0.01	0.08
EEE : Type 3							-0.05	0.11
EEE : Type 4							-0.04	0.07
EEE : Type 5							0.09	0.15
EEE : Type 6							0.04	0.17
EEE : Type 7							0.09	0.11
EEE : Type 8							-0.07	0.23

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
SFI : Type 2							-0.06	0.12
SFI : Type 3							-0.08	0.17
SFI : Type 4							-0.09	0.12
SFI : Type 5							-0.40	0.21
SFI : Type 6							-0.18	0.28
SFI : Type 7							-0.29	0.16
SFI : Type 8							0.01	0.33
ICI : Type 2							0.18	0.12
ICI : Type 3							0.22	0.16
ICI : Type 4							0.04	0.11
ICI : Type 5							0.29	0.20
ICI : Type 6							-0.25	0.27
ICI : Type 7							0.09	0.15
ICI : Type 8							0.34	0.34
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Satisfaction					0.00	0.00	0.00	0.00
LAC							0.00	0.00
ACL							0.00	0.00
EEE							0.00	0.00
SFI							0.00	0.00
ICI								
Level 1								
Intercept/Intercept	0.53	0.73	0.48	0.70	0.52	0.72	0.47	0.69
Model Fit								
AIC	4803		4639		4795		4751	
BIC	4990		4860		5056		5466	
Deviance	4737		4561		4703		4499	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields. LAC = level of academic challenge, ACL = active and collaborative learning, EEE = enriching educational experiences, and SFI = student faculty interactions, ICI = integration and consolidation of diverse ideas.

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
8					-0.01	0.12	-0.29	0.23
Hispanic : Type 2							0.09	0.19
Black : Type 2							0.05 *	0.27
Asian : Type 2							0.21 *	0.15
Hispanic : Type 3							-0.21	0.24
Black : Type 3							-0.34	0.33
Asian : Type 3							-0.18	0.21
Hispanic : Type 4							-0.19	0.17
Black : Type 4							-0.12	0.24
Asian : Type 4							-0.02	0.13
Hispanic : Type 5							0.15	0.23
Black : Type 5							0.12	0.31
Asian : Type 5							0.16	0.20
Hispanic : Type 6							0.04	0.37
Black : Type 6							0.18	0.36
Asian : Type 6							-0.30	0.37
Hispanic : Type 7							0.15	0.24
Black : Type 7							0.26	0.29
Asian : Type 7							-0.06	0.18
Hispanic : Type 8							0.08	0.31
Black : Type 8							0.25	0.37
Asian : Type 8							0.69 *	0.31
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.04 *	0.20	0.01	0.09	0.01	0.09	0.03	0.17
Race/ethnicity								
Hispanic							0.07	0.26
Black							0.06	0.24
Asian							0.03	0.17
Level 1								
Intercept/Intercept	0.78	0.88	0.60	0.77	0.60	0.77	0.57	0.76
Model Fit								
AIC	5238		4694		4706		4720	
BIC	5255		4795		4846		5044	
Deviance	5232		4658		4656		4604	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting Active and Collaborative Learning for First Years

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.13	0.10	-0.30 **	0.10	-0.28 *	0.14
Level 1 (Student)						
Age	0.04	0.07	0.06	0.07	0.06	0.07
Major	-0.23 **	0.10	-0.20 *	0.10	-0.22 *	0.10
Father's Education:						
Undergraduate	0.01	0.05	0.01	0.05	0.01	0.05
Graduate	0.02	0.06	0.02	0.06	0.02	0.06
Mother's Education:						
Undergraduate	0.09 *	0.05	0.11 *	0.04	0.11 *	0.04
Graduate	0.14 *	0.06	0.16 **	0.06	0.16 **	0.06
Residence	-0.02	0.04	-0.04	0.04	-0.03	0.04
Enrollment Status	0.17 *	0.08	0.17 *	0.08	0.17 *	0.08
Student Perception:						
Support for success	0.34 ***	0.02	0.33 ***	0.02	0.32 ***	0.02
Interpersonal environment	0.11 ***	0.03	0.11 ***	0.03	0.11 ***	0.03
Satisfaction	0.10 ***	0.03	0.10 ***	0.03	0.10 ***	0.03
Race/Ethnicity:						
Hispanic			0.20 ***	0.05	0.21	0.15
Black			0.23 ***	0.08	0.36	0.22
Asian			0.19 ***	0.04	0.13	0.11
Gender - female	-0.10	0.08	-0.06	0.04	0.10	0.10
Hispanic : female					0.07	0.10
Black : female					-0.10	0.14
Asian : female					0.03	0.09
Level 2 (Institution)						
Campus Environment:						
Institutional Control	0.00	0.05	0.00	0.05	-0.01	0.05
Academic	0.39 ***	0.09	0.37 ***	0.09	0.38 ***	0.09
Spiritual and Social	-0.37 ***	0.12	-0.35 ***	0.11	-0.33	0.12
Learning Outcome	0.41 ***	0.13	0.40 ***	0.13	0.40	0.13
Institutional Types:						
2	-0.02	0.08	-0.06	0.06	-0.12	0.14
3	-0.20	0.12	-0.06	0.09	-0.04	0.18
4	-0.09	0.08	-0.03	0.06	-0.02	0.13
5	0.04	0.12	0.00	0.08	-0.05	0.19

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
6	-0.13	0.22	-0.01	0.13	-0.27	0.30
7	-0.07	0.10	0.01	0.08	-0.07	0.18
8	0.06	0.15	-0.04	0.11	-0.22	0.26
Female : Type 2	-0.09	0.12			-0.12	0.12
Female : Type 3	0.23	0.16			0.18	0.16
Female : Type 4	0.08	0.11			0.05	0.11
Female : Type 5	0.06	0.15			0.04	0.15
Female : Type 6	0.21	0.26			0.28	0.26
Female : Type 7	0.13	0.14			0.13	0.14
Female : Type 8	-0.17	0.21			-0.15	0.22
Hispanic : Type 2					0.11	0.19
Black : Type 2					0.00	0.27
Asian : Type 2					0.19 *	0.15
Hispanic : Type 3					-0.21	0.23
Black : Type 3					-0.33	0.33
Asian : Type 3					-0.17	0.21
Hispanic : Type 4					-0.19	0.17
Black : Type 4					-0.17	0.25
Asian : Type 4					0.03	0.14
Hispanic : Type 5					-0.13	0.23
Black : Type 5					-0.11	0.31
Asian : Type 5					0.17	0.20
Hispanic : Type 6					0.09	0.37
Black : Type 6					0.17	0.36
Asian : Type 6					-0.30	0.37
Hispanic : Type 7					0.17	0.24
Black : Type 7					-0.28	0.30
Asian : Type 7					0.05	0.18
Hispanic : Type 8					0.08	0.31
Black : Type 8					0.25	0.37
Asian : Type 8					0.67 *	0.31
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.03	0.17
Gender: female	0.01	0.12	0.02	0.15	0.02	0.13

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Race/ethnicity:						
Hispanic			0.01	0.09	0.06	0.25
Black			0.09	0.32	0.06	0.25
Asian			0.00	0.00	0.03	0.18
Level 1						
Intercept/Intercept	0.59	0.77	0.58	0.76	0.57	0.75
Model Fit						
AIC	4714		4708		4735	
BIC	4910		4948		5150	
Deviance	4644		4622		4587	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting Active and Collaborative Learning for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.05	0.03	-0.17	0.09	-0.20	0.09	-0.29 *	0.11
Level 1 (Student)								
Age			-0.07	0.04	-0.07	0.04	-0.09	0.04
Transfer Status			0.00	0.04	0.02	0.04	-0.01	0.04
Major:								
STEM			-0.06	0.05	-0.04	0.05	-0.05	0.05
Business/Professional			0.13 **	0.04	0.12 **	0.04	0.12 *	0.04
Social Sciences/Education			-0.03	0.05	-0.02	0.05	-0.04	0.05
Father's Education:								
Undergraduate			0.03	0.05	0.03	0.05	0.05	0.05
Graduate			0.12 *	0.06	0.12	0.06	0.15 *	0.06
Mother's Education:								
Undergraduate			-0.03	0.04	-0.03	0.04	-0.03	0.04
Graduate			-0.01	0.06	-0.01	0.06	-0.03	0.06
Residence			0.06	0.05	0.02	0.05	0.02	0.05
Enrollment Status			0.14 **	0.05	0.15 **	0.05	0.18 ***	0.05
Student Perception:								
Support for success			0.33 ***	0.03	0.32 ***	0.03	0.33 ***	0.03
Interpersonal environment			0.15 ***	0.03	0.16 ***	0.03	0.15 ***	0.03
Satisfaction			0.02	0.03	0.02	0.03	0.01	0.03
Race/Ethnicity:								
Hispanic							0.28 *	0.12
Black							0.17	0.16
Asian							0.00	0.09
Level 2 (Institution)								
Campus Environment:								
Institutional Control			0.02	0.04	0.03	0.05	0.09	0.05
Spiritual and Social			-0.67 **	0.19	-0.49 **	0.20	-0.49 **	0.19
Learning Outcome			0.91 **	0.21	0.75 **	0.21	0.75 **	0.17
Institutional Types:								
2					0.10	0.06	0.09	0.11
3					0.15	0.08	-0.08	0.14
4					0.09	0.05	0.03	0.10
5					0.05	0.09	-0.23	0.20
6					0.03	0.11	-0.01	0.17

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
7					-0.15	0.08	-0.19	0.15
8					0.12	0.14	0.06	0.34
Hispanic : Type 2							-0.10	0.19
Black : Type 2							-0.07	0.20
Asian : Type 2							-0.02	0.13
Hispanic : Type 3							0.20	0.21
Black : Type 3							0.16	0.23
Asian : Type 3							0.33	* 0.18
Hispanic : Type 4							0.04	0.15
Black : Type 4							-0.03	0.19
Asian : Type 4							0.37	0.12
Hispanic : Type 5							-0.07	0.25
Black : Type 5							-0.06	0.37
Asian : Type 5							0.02	0.25
Hispanic : Type 6							-0.08	0.31
Black : Type 6							0.50	0.32
Asian : Type 6							-0.36	0.26
Hispanic : Type 7							-0.14	0.26
Black : Type 7							0.17	0.29
Asian : Type 7							-0.02	0.17
Hispanic : Type 8							-0.34	0.40
Black : Type 8							0.35	0.45
Asian : Type 8							0.14	0.44
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.06	0.25	0.02	0.00	0.01	0.09	0.00	0.00
Race/ethnicity								
Hispanic							0.06	0.24
Black							0.00	0.07
Asian							0.00	0.00
Level 1								
Intercept/Intercept	0.85	0.92	0.67	0.80	0.67	0.82	0.65	0.81
Model Fit								
AIC	5874		5346		5349		5344	
BIC	5891		5459		5502		5684	
Deviance	5868		5306		5295		5224	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting Active and Collaborative Learning for Seniors

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.18	0.10	-0.34 *	0.10	-0.34 *	0.13
Level 1 (Student)						
Age	-0.08	0.04	-0.08	0.04	-0.09	0.04
Transfer Status	-0.02	0.04	-0.01	0.04	-0.01	0.04
Major:						
STEM	-0.05	0.05	-0.05	0.05	-0.05	0.05
Business/Professional	0.12 **	0.04	0.11 *	0.04	0.12 **	0.04
Social Sciences/Education	-0.02	0.05	-0.04	0.05	-0.04	0.05
Father's Education:						
Undergraduate	0.03	0.05	0.06	0.05	0.05 *	0.05
Graduate	0.13 *	0.06	0.15 *	0.06	0.15 **	0.06
Mother's Education:						
Undergraduate	-0.03	0.04	-0.03	0.04	-0.03	0.04
Graduate	-0.01	0.06	-0.02	0.06	-0.03	0.06
Residence	0.03	0.05	0.03	0.05	0.02	0.05
Enrollment Status	0.15 **	0.05	0.18 **	0.05	0.19 ***	0.05
Student Perception:						
Support for success	0.33 ***	0.03	0.32 ***	0.03	0.33 ***	0.03
Interpersonal environment	0.16 ***	0.03	0.16 ***	0.03	0.15 ***	0.03
Satisfaction	0.02	0.03	0.01	0.03	0.01	0.03
Race/ethnicity						
Hispanic			0.29 ***	0.05	0.38 **	0.14
Black			0.21 ***	0.06	0.26	0.17
Asian			0.04	0.04	0.06	0.10
Gender - female	-0.04	0.08	0.02	0.04	0.07	0.10
Hispanic : female					-0.19	0.10
Black : female					-0.02	0.13
Asian : female					-0.11	0.09
Level 2 (Institution)						
Campus Environment:						
Institutional Control	0.03	0.05	0.06	0.05	0.08	0.05
Spiritual and Social	-0.50 **	0.20	-0.46 *	0.20	-0.46 *	0.20
Learning Outcome	0.76 ***	0.21	0.73 ***	0.21	0.74 ***	0.22

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Institutional Types:						
2	0.11	0.08	0.08	0.06	0.11	0.13
3	0.11	0.11	0.10	0.08	-0.10	0.17
4	-0.04	0.08	0.05	0.05	-0.09	0.12
5	0.10	0.14	-0.08	0.09	-0.11	0.23
6	0.18	0.17	0.01	0.11	0.11	0.23
7	-0.10	0.12	-0.16	0.08	-0.17	0.18
8	0.10	0.21	0.08	0.13	0.04	0.37
Female : Type 2	-0.03	0.11			-0.02	0.11
Female : Type 3	0.08	0.14			0.04	0.15
Female : Type 4	0.21 *	0.10			0.20 *	0.10
Female : Type 5	-0.07	0.18			-0.21	0.19
Female : Type 6	-0.24	0.21			-0.17	0.22
Female : Type 7	-0.06	0.14			-0.03	0.15
Female : Type 8	0.05	0.27			0.05	0.28
Hispanic : Type 2					-0.08	0.17
Black : Type 2					-0.05	0.21
Asian : Type 2					-0.01	0.14
Hispanic : Type 3					0.21	0.22
Black : Type 3					0.19	0.23
Asian : Type 3					0.34	0.18
Hispanic : Type 4					0.05	0.16
Black : Type 4					0.02	0.19
Asian : Type 4					0.03	0.12
Hispanic : Type 5					0.43	0.26
Black : Type 5					-0.11	0.38
Asian : Type 5					0.01	0.26
Hispanic : Type 6					-0.07	0.32
Black : Type 6					0.47	0.34
Asian : Type 6					-0.36	0.27
Hispanic : Type 7					-0.12	0.26
Black : Type 7					0.19	0.29
Asian : Type 7					0.00	0.18
Hispanic : Type 8					-0.33	0.41
Black : Type 8					0.39	0.46
Asian : Type 8					0.14	0.44

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.03	0.17	0.00	0.00	0.00	0.00
Gender: female	0.01	0.12	0.00	0.00	0.00	0.00
Race/ethnicity:						
Hispanic			0.08	0.27	0.06	0.24
Black			0.03	0.17	0.00	0.06
Asian			0.02	0.12	0.01	0.08
Level 1						
Intercept/Intercept						
Model Fit	0.67	0.82	0.65	0.80	0.64	0.80
AIC	5357		5332		5361	
BIC	5567		5588		5792	
Deviance	5283		5242		5209	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting Enriching Educational Experiences for First Years

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.01	0.03	-0.22 *	0.09	-0.17	0.10	-0.40 **	0.12
Level 1 (Student)								
Age			-0.03	0.08	-0.03	0.08	-0.01	0.07
Major			-0.45 ***	0.10	-0.45 ***	0.10	-0.42 ***	0.10
Father's Education:								
Undergraduate			-0.01	0.05	-0.01	0.05	-0.01	0.05
Graduate			0.03	0.06	0.02	0.09	0.00	0.06
Mother's Education:								
Undergraduate			0.10 *	0.05	0.10 *	0.05	0.11 *	0.05
Graduate			0.13 *	0.06	0.13 *	0.06	0.16 **	0.06
Residence			-0.02	0.04	0.00	0.04	-0.01	0.04
Enrollment Status			0.19 *	0.08	0.18 *	0.09	0.20 *	0.08
Student Perception:								
Support for success			0.28 ***	0.02	0.28 ***	0.02	0.27 ***	0.02
Interpersonal environment			-0.01	0.03	-0.01	0.03	0.00	0.03
Satisfaction			0.06 *	0.03	0.06 *	0.03	0.06 *	0.03
Race/Ethnicity:								
Hispanic							0.49 ***	0.14
Black							0.47 *	0.20
Asian							0.20 *	0.10
Level 2 (Institution)								
Campus Environment:								
Institutional Control			-0.02	0.05	-0.01	0.05	0.03	0.05
Academic			0.00	0.09	0.05	0.10	0.04	0.09
Spiritual and Social			-0.21	0.12	-0.21	0.13	-0.17	0.12
Learning Outcome			0.54 ***	0.14	0.45 **	0.14	0.42 *	0.14
Institutional Types:								
2					-0.02	0.07	-0.08	0.12
3					-0.13	0.10	0.06	0.16
4					-0.13 *	0.06	-0.04	0.11
5					-0.15	0.08	-0.10	0.16
6					-0.08	0.13	-0.03	0.22
7					-0.02	0.09	0.05	0.16

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
8					0.01	0.12	-0.26	0.23
Hispanic : Type 2							-0.10	0.19
Black : Type 2							-0.08	0.27
Asian : Type 2							0.14	0.15
Hispanic : Type 3							-0.31	0.23
Black : Type 3							-0.54	0.33
Asian : Type 3							-0.29	0.20
Hispanic : Type 4							-0.36 *	0.17
Black : Type 4							-0.26	0.24
Asian : Type 4							0.03	0.13
Hispanic : Type 5							-0.37	0.23
Black : Type 5							-0.34	0.31
Asian : Type 5							0.10	0.20
Hispanic : Type 6							-0.21	0.37
Black : Type 6							-0.09	0.36
Asian : Type 6							-0.84 *	0.36
Hispanic : Type 7							-0.27	0.24
Black : Type 7							-0.42	0.29
Asian : Type 7							-0.06	0.17
Hispanic : Type 8							0.00	0.31
Black : Type 8							0.04	0.37
Asian : Type 8							0.76 *	0.31
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.03 *	0.18	0.01	0.12	0.01	0.11	0.02	0.16
Race/ethnicity								
Hispanic							0.05	0.23
Black							0.06	0.25
Asian							0.02	0.15
Level 1								
Intercept/Intercept	0.69	0.83	0.61	0.78	0.60	0.78	0.58	0.76
Model Fit								
AIC	4994		4741		4748		4742	
BIC	5011		4842		4888		5066	
Deviance	4988		4705		4698		4626	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting Enriching Educational Experiences for First Years

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.17	0.11	-0.32 **	0.11	0.45 **	0.14
Level 1 (Student)						
Age	-0.04	0.07	-0.01	0.07	-0.01	0.07
Major	-0.44 ***	0.10	-0.41 ***	0.10	-0.41 ***	0.10
Father's Education:						
Undergraduate	-0.02	0.05	-0.01	0.05	-0.01	0.05
Graduate	0.01	0.06	0.00	0.06	0.00	0.06
Mother's Education:						
Undergraduate	0.10 *	0.05	0.11 *	0.05	0.11 *	0.04
Graduate	0.13 *	0.06	0.17 **	0.06	0.16 *	0.06
Residence	0.00	0.04	-0.03	0.04	-0.02	0.04
Enrollment Status	0.20 *	0.08	0.20 *	0.08	0.22 **	0.08
Student Perception:						
Support for success	0.28 ***	0.02	0.27 ***	0.02	0.27 ***	0.02
Interpersonal environment	0.01	0.03	0.00	0.03	0.00	0.03
Satisfaction	0.06 *	0.03	0.06 *	0.03	0.06 *	0.03
Race/Ethnicity:						
Hispanic			0.27 ***	0.06	0.52 ***	0.15
Black			0.25 **	0.08	0.62 **	0.22
Asian			0.21 ***	0.05	0.24 *	0.11
Gender - female	0.00	0.07	-0.07	0.04	0.07	0.10
Hispanic : female					0.01 **	0.10
Black : female					-0.25	0.14
Asian : female					-0.04	0.09
Level 2 (Institution)						
Campus Environment:						
Institutional Control	0.00	0.05	0.02	0.05	0.03	0.05
Academic	0.07	0.10	0.03	0.09	0.06 *	0.09
Spiritual and Social	-0.21	0.13	-0.15	0.11	-0.16	0.12
Learning Outcome	0.45 ***	0.14	0.40 **	0.13	0.41 **	0.13
Institutional Types:						
2	0.13	0.09	-0.02	0.06	0.10	0.14
3	-0.14	0.13	-0.11	0.09	0.09	0.17
4	-0.07	0.08	-0.10 *	0.06	0.04	0.12
5	-0.06	0.13	-0.16	0.08	-0.01	0.18

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
6	-0.49 *	0.23	-0.09	0.13	-0.48	0.29
7	-0.06	0.11	-0.03	0.08	0.01	0.17
8	0.11	0.16	-0.03	0.11	-0.15	0.25
Female : Type 2	-0.29 **	0.11			0.30 **	0.11
Female : Type 3	0.02	0.15			-0.03	0.16
Female : Type 4	-0.09	0.10			-0.12	0.11
Female : Type 5	-0.16	0.15			-0.17	0.15
Female : Type 6	0.54 *	0.25			0.60 *	0.26
Female : Type 7	0.07	0.13			0.07	0.13
Female : Type 8	-0.22	0.21			-0.20	0.21
Hispanic : Type 2					-0.13	0.19
Black : Type 2					-0.15	0.28
Asian : Type 2					0.13	0.14
Hispanic : Type 3					-0.34	0.24
Black : Type 3					-0.57	0.34
Asian : Type 3					-0.30	0.20
Hispanic : Type 4					-0.39 *	0.17
Black : Type 4					-0.30	0.25
Asian : Type 4					0.02	0.13
Hispanic : Type 5					-0.38	0.23
Black : Type 5					-0.28	0.32
Asian : Type 5					0.12	0.20
Hispanic : Type 6					-0.13	0.37
Black : Type 6					0.03	0.36
Asian : Type 6					-0.78 *	0.36
Hispanic : Type 7					-0.29	0.24
Black : Type 7					-0.43	0.30
Asian : Type 7					-0.06	0.17
Hispanic : Type 8					0.05	0.31
Black : Type 8					-0.04	0.38
Asian : Type 8					0.73 *	0.31
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.97	0.01	0.07	0.01	0.10
Gender: female	0.00	0.01	0.01	0.24	0.01	0.09

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Race/ethnicity:						
Hispanic			0.06	0.24	0.06	0.25
Black			0.12	0.35	0.09	0.31
Asian			0.02	0.16	0.02	0.13
Level 1						
Intercept/Intercept	0.60	0.77	0.59	0.77	0.57	0.76
Model Fit						
AIC		4746		4739		4746
BIC		4942		4979		5161
Deviance		4676		4653		4598

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting Enriching Educational Experiences for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
	Fixed effects							
Intercept	0.04	0.03	0.03	0.08	0.01	0.10	-0.20	0.11
Level 1 (Student)								
Age			-0.19 ***	0.04	-0.19 ***	0.04	-0.18 ***	0.04
Transfer Status			-0.16 ***	0.04	-0.17 ***	0.04	-0.18 ***	0.04
Major:								
STEM			0.13 **	0.05	0.14 **	0.05	0.13	0.05
Business/Professional			0.04	0.04	0.04	0.04	0.03	0.04
Social Sciences/Education			0.07	0.05	0.07	0.05	0.07	0.05
Father's Education:								
Undergraduate			0.00	0.04	0.00	0.04	0.01	0.05
Graduate			0.15 **	0.05	0.15 **	0.05	0.15 **	0.06
Mother's Education:								
Undergraduate			0.01	0.04	0.01	0.04	0.02	0.04
Graduate			0.03	0.06	0.03	0.06	0.05	0.06
Residence			-0.13 **	0.05	-0.14 **	0.05	-0.14 **	0.05
Enrollment Status			0.24 ***	0.05	0.24 ***	0.05	0.26 ***	0.05
Student Perception:								
Support for success			0.28 ***	0.03	0.29 ***	0.03	0.28 ***	0.03
Interpersonal environment			0.12 ***	0.03	0.12 ***	0.03	0.13 ***	0.03
Satisfaction			-0.05	0.03	-0.05	0.03	-0.05	0.03
Race/Ethnicity:								
Hispanic							0.30 *	0.12
Black							0.09	0.15
Asian							0.29 **	0.09
Level 2 (Institution)								
Campus Environment:								
Institutional Control			-0.07	0.04	-0.07	0.04	-0.05	0.05
Spiritual and Social			0.09	0.19	0.19	0.19	0.15	0.18
Learning Outcome			0.29	0.20	0.21	0.20	0.25	0.16
Institutional Types:								
2					0.06	0.05	0.16	0.11
3					0.11	0.08	0.15	0.13
4					0.04	0.05	0.13	0.09
5					-0.07	0.09	0.01	0.20
6					0.09	0.11	0.15	0.17

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
7					-0.11	0.08	-0.02	0.15
8					0.14	0.13	0.09	0.33
Hispanic : Type 2							-0.16	0.16
Black : Type 2							-0.05	0.20
Asian : Type 2							-0.15	0.13
Hispanic : Type 3							-0.20	0.21
Black : Type 3							0.06	0.23
Asian : Type 3							0.05	0.17
Hispanic : Type 4							-0.05	0.15
Black : Type 4							0.04	0.19
Asian : Type 4							-0.16	0.12
Hispanic : Type 5							-0.03	0.24
Black : Type 5							-0.21	0.37
Asian : Type 5							-0.33	0.25
Hispanic : Type 6							0.08	0.30
Black : Type 6							0.17	0.32
Asian : Type 6							-0.22	0.26
Hispanic : Type 7							-0.06	0.25
Black : Type 7							0.38	0.28
Asian : Type 7							-0.21	0.17
Hispanic : Type 8							-0.19	0.39
Black : Type 8							0.35	0.45
Asian : Type 8							0.27	0.44
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.08	0.28	0.02	0.13	0.01	0.12	0.00	0.00
Race/ethnicity								
Hispanic							0.05	0.22
Black							0.00	0.02
Asian							0.01	0.11
Level 1								
Intercept/Intercept	0.74	0.86	0.61	0.78	0.61	0.78	0.59	0.77
Model Fit								
AIC	5585		5126		5134		5159	
BIC	5602		5239		5287		5499	
Deviance	5579		5086		5080		5039	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting Enriching Educational Experiences for Seniors

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.20	0.10	-0.19	0.10	-0.24	0.12
Level 1 (Student)						
Age	-0.19 ***	0.04	-0.18 ***	0.04	-0.19 ***	0.04
Transfer Status	-0.17 ***	0.04	-0.18 ***	0.04	-0.18 ***	0.04
Major:						
STEM	0.15 **	0.05	0.14	0.05	0.13 **	0.05
Business/Professional	0.03	0.04	0.02	0.04	0.01	0.04
Social Sciences/Education	0.06	0.05	0.07	0.05	0.07	0.05
Father's Education:						
Undergraduate	0.00	0.05	0.01	0.04	0.01	0.05
Graduate	0.16 **	0.06	0.16 **	0.06	0.16 **	0.06
Mother's Education:						
Undergraduate	0.01	0.04	0.03	0.04	0.02	0.04
Graduate	0.03	0.06	0.06	0.06	0.05	0.06
Residence	-0.14 **	0.05	-0.14 *	0.05	-0.13 **	0.05
Enrollment Status	0.26 ***	0.05	0.24 ***	0.05	0.25 ***	0.05
Student Perception:						
Support for success	0.29 ***	0.03	0.28 ***	0.03	0.28 ***	0.03
Interpersonal environment	0.13 ***	0.03	0.13 ***	0.03	0.12 ***	0.03
Satisfaction	-0.05	0.03	-0.05	0.03	-0.05	0.03
Race/ethnicity						
Hispanic			0.22 ***	0.05	0.28 *	0.13
Black			0.14 *	0.06	0.12	0.16
Asian			0.18 ***	0.04	0.25 *	0.10
Gender - female	0.06	0.07	0.03	0.04	0.06	0.09
Hispanic : female					0.00	0.10
Black : female					-0.03	0.13
Asian : female					0.04	0.09
Level 2 (Institution)						
Campus Environment:						
Institutional Control	-0.07	0.04	-0.04	0.04	-0.04	0.05
Spiritual and Social	0.20	0.18	0.17	0.17	0.16	0.18
Learning Outcome	0.22	0.15	0.22	0.15	0.24	0.16

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Institutional Types:						
2	0.16	0.08	0.08	0.06	0.27 *	0.12
3	0.08	0.11	0.13	0.08	0.10	0.16
4	0.01	0.07	0.07	0.05	0.10	0.11
5	0.07	0.14	-0.10	0.09	0.18	0.22
6	0.12	0.17	0.13	0.11	0.29	0.22
7	0.00	0.12	-0.05	0.08	0.04	0.17
8	-0.07	0.21	0.18	0.13	-0.03	0.36
Female : Type 2	-0.16	0.11			-0.18	0.11
Female : Type 3	0.07	0.14			0.08	0.14
Female : Type 4	0.07	0.10			0.06	0.10
Female : Type 5	-0.21	0.18			-0.32	0.18
Female : Type 6	-0.20	0.21			-0.18	0.21
Female : Type 7	-0.08	0.14			-0.10	0.14
Female : Type 8	0.34	0.26			0.29	0.27
Hispanic : Type 2					-0.17	0.16
Black : Type 2					-0.07	0.20
Asian : Type 2					-0.17	0.13
Hispanic : Type 3					-0.23	0.21
Black : Type 3					0.05	0.23
Asian : Type 3					0.04	0.17
Hispanic : Type 4					-0.06	0.15
Black : Type 4					0.05	0.19
Asian : Type 4					-0.17	0.12
Hispanic : Type 5					0.01	0.25
Black : Type 5					-0.27	0.37
Asian : Type 5					-0.35	0.25
Hispanic : Type 6					0.06	0.30
Black : Type 6					0.13	0.32
Asian : Type 6					-0.24	0.26
Hispanic : Type 7					-0.07	0.25
Black : Type 7					0.36	0.28
Asian : Type 7					-0.22	0.17
Hispanic : Type 8					-0.22	0.39
Black : Type 8					0.26	0.45
Asian : Type 8					0.22	0.44

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.02	0.13	0.00	0.00	0.00	0.00
Gender: female	0.00	0.03	0.00	0.00	0.00	0.00
Race/ethnicity:						
Hispanic			0.06	0.25	0.05	0.22
Black			0.02	0.12	0.00	0.00
Asian			0.02	0.13	0.01	0.01
Level 1						
Intercept/Intercept	0.60	0.78	0.59	0.77	0.59	0.77
Model Fit						
AIC	5143		5140		5177	
BIC	5353		5395		5608	
Deviance	5069		5050		5025	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting Student-Faculty Interactions for First Years

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Fixed effects								
Intercept	0.02	0.03	-0.17	0.09	-0.16	0.10	-0.35 **	0.12
Level 1 (Student)								
Age			0.03	0.07	0.03	0.07	0.05	0.07
Major			-0.22 *	0.10	-0.21 *	0.10	-0.18	0.10
Father's Education:								
Undergraduate			-0.01	0.05	-0.01	0.05	-0.01	0.05
Graduate			0.01	0.06	0.00	0.06	0.00	0.06
Mother's Education:								
Undergraduate			0.09	0.05	0.09	0.05	0.11 *	0.05
Graduate			0.13 *	0.06	0.13 *	0.06	0.16 *	0.06
Residence			-0.02	0.04	-0.01	0.04	-0.03	0.04
Enrollment Status			0.14	0.08	0.14	0.08	0.15	0.08
Student Perception:								
Support for success			0.34 ***	0.02	0.34 ***	0.02	0.33 ***	0.02
Interpersonal environment			0.12 ***	0.03	0.12 ***	0.03	0.13 ***	0.03
Satisfaction			0.09 ***	0.03	0.09 ***	0.03	0.09 ***	0.03
Race/Ethnicity:								
Hispanic							0.29 **	0.14
Black							0.40 *	0.20
Asian							0.19 *	0.10
Level 2 (Institution)								
Campus Environment:								
Institutional Control			-0.02	0.05	-0.02	0.05	0.00	0.05
Academic			0.33 ***	0.09	0.33 ***	0.09	0.33 ***	0.09
Spiritual and Social			-0.23	0.12	-0.24	0.12	-0.23	0.12
Learning Outcome			0.31 *	0.13	0.32 *	0.14	0.30 *	0.13
Institutional Types:								
2					-0.05	0.07	-0.14	0.12
3					-0.05	0.09	0.09	0.16
4					-0.01	0.06	0.06	0.11
5					0.00	0.09	0.01	0.16
6					0.04	0.13	-0.10	0.22
7					0.02	0.08	0.07	0.16

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
8					-0.02	0.12	-0.21	0.23
Hispanic : Type 2							0.07	0.19
Black : Type 2							-0.05	0.27
Asian : Type 2							0.19	0.14
Hispanic : Type 3							-0.25	0.23
Black : Type 3							-0.34	0.33
Asian : Type 3							-0.15	0.20
Hispanic : Type 4							-0.15	0.17
Black : Type 4							-0.23	0.24
Asian : Type 4							0.03	0.13
Hispanic : Type 5							-0.16	0.23
Black : Type 5							-0.27	0.31
Asian : Type 5							0.15	0.20
Hispanic : Type 6							0.11	0.37
Black : Type 6							0.25	0.36
Asian : Type 6							-0.10	0.37
Hispanic : Type 7							0.08	0.24
Black : Type 7							-0.41	0.29
Asian : Type 7							-0.08	0.17
Hispanic : Type 8							0.01	0.31
Black : Type 8							0.09	0.37
Asian : Type 8							0.57	0.31
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.04 *	0.19	0.01	0.10	0.01	0.09	0.02	0.16
Race/ethnicity								
Hispanic							0.06	0.25
Black							0.03	0.18
Asian							0.02	0.14
Level 1								
Intercept/Intercept	0.79	0.89	0.61	0.78	0.61	0.78	0.59	0.76
Model Fit								
AIC		5265		4732		4745		4754
BIC		5281		4833		4885		5079
Deviance		5259		4696		4695		4638

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting Student-Faculty Interactions for First Years

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.10	0.10	-0.29 **	0.11	-0.27	0.14
Level 1 (Student)						
Age	0.02	0.07	0.04	0.07	0.04	0.07
Major	-0.20 *	0.10	-0.18 *	0.10	-0.19	0.10
Father's Education:						
Undergraduate	-0.02	0.05	-0.01	0.05	-0.01	0.05
Graduate	0.01	0.06	-0.01	0.06	-0.01	0.06
Mother's Education:						
Undergraduate	0.08	0.05	0.10 *	0.05	0.10 *	0.05
Graduate	0.13 *	0.06	0.16 *	0.06	0.15 *	0.06
Residence	-0.01	0.04	-0.03	0.04	-0.03	0.04
Enrollment Status	0.14	0.08	0.14 **	0.08	0.15 **	0.08
Student Perception:						
Support for success	0.34 ***	0.02	0.33 ***	0.02	0.33 ***	0.02
Interpersonal environment	0.12 ***	0.03	0.13 ***	0.03	0.12 ***	0.03
Satisfaction	0.09 ***	0.03	0.09 ***	0.03	0.09 ***	0.03
Race/Ethnicity:						
Hispanic			0.21 ***	0.06	0.21 ***	0.15
Black			0.25 **	0.05	0.44 **	0.23
Asian			0.22 ***	0.05	0.15 ***	0.11
Gender - female	-0.09	0.08	-0.06	0.04	-0.12	0.10
Hispanic : female			**		0.12 **	0.10
Black : female					-0.07	0.14
Asian: female					0.08	0.09
Level 2 (Institution)						
Campus Environment:						
Institutional Control	-0.02	0.05	-0.02	0.05	-0.01	0.05
Academic	0.35 ***	0.09	0.33 ***	0.09	0.34 ***	0.09
Spiritual and Social	-0.27 *	0.12	-0.24 *	0.11	-0.24 *	0.12
Learning Outcome	0.33 *	0.13	0.33 *	0.13	0.32 *	0.13
Institutional Types:						
2	-0.02	0.08	-0.04	0.06	-0.09	0.14
3	-0.17	0.12	-0.04	0.09	0.01	0.18
4	-0.05	0.08	0.00	0.06	0.04	0.13
5	-0.03	0.12	0.02	0.08	-0.02	0.19

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
6	-0.09	0.22	0.02	0.13	-0.29	0.30
7	-0.04	0.10	0.00	0.08	0.01	0.18
8	0.07	0.15	-0.04	0.11	-0.12	0.26
Female : Type 2	-0.08	0.12			-0.11	0.12
Female : Type 3	0.18	0.16			0.14	0.16
Female : Type 4	0.06	0.11			0.02	0.11
Female : Type 5	0.05	0.15			0.03	0.16
Female : Type 6	0.18	0.26			0.26	0.26
Female : Type 7	0.08	0.14			0.08	0.14
Female : Type 8	-0.19	0.21			-0.18	0.22
Hispanic : Type 2					0.07	0.19
Black : Type 2					-0.07	0.28
Asian : Type 2					0.17	0.15
Hispanic : Type 3					-0.25	0.23
Black : Type 3					-0.32	0.34
Asian : Type 3					-0.14	0.20
Hispanic : Type 4					-0.15	0.17
Black : Type 4					-0.25	0.25
Asian : Type 4					-0.03	0.13
Hispanic : Type 5					-0.15	0.23
Black : Type 5					-0.22	0.32
Asian : Type 5					0.17	0.20
Hispanic : Type 6					-0.14	0.37
Black : Type 6					0.25	0.36
Asian : Type 6					-0.10	0.37
Hispanic : Type 7					0.09	0.24
Black : Type 7					-0.41	0.30
Asian : Type 7					-0.07	0.17
Hispanic : Type 8					0.00	0.31
Black : Type 8					0.08	0.38
Asian : Type 8					0.55	0.31
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.03	0.16	0.03	0.16
Gender: female	0.01	0.11	0.02	0.14	0.02	0.13

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Race/ethnicity:						
Hispanic			0.05	0.23	0.06	0.25
Black			0.10	0.32	0.07	0.26
Asian			0.02	0.16	0.02	0.15
Level 1						
Intercept/Intercept	0.61	0.78	0.58	0.76	0.57	0.76
Model Fit						
AIC	4756		4734		4771	
BIC	4952		4974		5186	
Deviance	4686		4648		4623	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting Student-Faculty Interactions for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
	Fixed effects							
Intercept	0.05	0.03	-0.10	0.08	-0.16	0.09	-0.31 **	0.11
Level 1 (Student)								
Age			-0.08	0.04	-0.09 *	0.04	-0.08 *	0.04
Transfer Status			-0.04	0.04	-0.07	0.04	-0.06	0.04
Major:								
STEM			-0.02	0.05	-0.01	0.05	-0.02	0.05
Business/Professional			0.00	0.04	-0.02	0.04	-0.03	0.04
Social Sciences/Education			-0.04	0.05	-0.02	0.05	-0.03	0.05
Father's Education:								
Undergraduate			0.03	0.05	0.04	0.05	0.04	0.05
Graduate			0.14 **	0.06	0.15 **	0.06	0.15 **	0.06
Mother's Education:								
Undergraduate			-0.01	0.04	-0.02	0.04	-0.01	0.04
Graduate			0.01	0.06	0.01	0.06	0.02	0.06
Residence			0.03	0.05	-0.01	0.05	-0.01	0.05
Enrollment Status			0.16 ***	0.05	0.18 ***	0.05	0.19 ***	0.05
Student Perception:								
Support for success			0.30 ***	0.03	0.31 ***	0.03	0.31 ***	0.03
Interpersonal environment			0.23 ***	0.03	0.22 ***	0.03	0.22 ***	0.03
Satisfaction			-0.01	0.03	-0.01	0.03	-0.01	0.03
Race/Ethnicity:								
Hispanic							0.32 *	0.12
Black							0.04	0.15
Asian							0.11	0.09
Level 2 (Institution)								
Campus Environment:								
Institutional Control			-0.02	0.04	-0.03	0.04	-0.01	0.05
Spiritual and Social			-0.57 **	0.16	-0.39 *	0.18	-0.28	0.18
Learning and Dev.			0.83 ***	0.14	0.66 ***	0.15	0.59 ***	0.16
Institutional Types:								
2					0.15 **	0.06	0.17	0.11
3					0.16 *	0.08	0.14	0.13
4					0.11 *	0.05	0.09	0.10
5					0.02	0.09	0.06	0.20
6					0.17	0.11	0.19	0.17

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
7					-0.10	0.08	-0.01	0.15
8					0.23	0.13	0.07	0.33
Hispanic : Type 2							-0.16	0.16
Black : Type 2							0.10	0.20
Asian : Type 2							-0.02	0.13
Hispanic : Type 3							-0.07	0.21
Black : Type 3							-0.01	0.23
Asian : Type 3							0.11	0.17
Hispanic : Type 4							-0.04	0.15
Black : Type 4							0.19	0.19
Asian : Type 4							0.00	0.12
Hispanic : Type 5							-0.09	0.24
Black : Type 5							-0.03	0.37
Asian : Type 5							-0.31	0.25
Hispanic : Type 6							-0.11	0.31
Black : Type 6							0.40	0.32
Asian : Type 6							-0.21	0.26
Hispanic : Type 7							-0.22	0.25
Black : Type 7							0.25	0.28
Asian : Type 7							-0.15	0.17
Hispanic : Type 8							-0.24	0.39
Black : Type 8							0.67	0.45
Asian : Type 8							0.23	0.44
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.05	0.23	0.01	0.10	0.00	0.00	0.00	0.00
Race/ethnicity								
Hispanic							0.05	0.21
Black							0.03	0.16
Asian							0.01	0.10
Level 1								
Intercept/Intercept	0.8	0.90	0.62	0.79	0.62	0.78	0.59	0.77
Model Fit								
AIC	5749		5154		5154		5171	
BIC	5766		5268		5307		5511	
Deviance	5743		5114		5100		5051	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting Student-Faculty Interactions for Seniors

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.13	0.10	-0.28 **	0.10	-0.29 *	0.12
Level 1 (Student)						
Age	-0.09 *	0.04	-0.08 *	0.04	-0.09 *	0.04
Transfer Status	-0.07	0.04	-0.06	0.04	-0.06	0.04
Major:						
STEM	-0.01	0.05	-0.02	0.05	-0.03	0.05
Business/Professional	-0.02	0.04	-0.02	0.04	-0.02	0.04
Social Sciences/Education	-0.01	0.05	-0.02	0.05	-0.02	0.05
Father's Education:						
Undergraduate	0.04	0.05	0.05	0.05	0.04	0.05
Graduate	0.15 **	0.06	0.16 **	0.06	0.16 **	0.06
Mother's Education:						
Undergraduate	-0.02	0.04	-0.01	0.04	-0.01	0.04
Graduate	0.01	0.06	0.02	0.06	0.02	0.06
Residence	0.00	0.05	0.00	0.05	-0.01	0.05
Enrollment Status	0.17 ***	0.05	0.18 ***	0.05	0.19 ***	0.05
Student Perception:						
Support for success	0.31 ***	0.03	0.30 ***	0.03	0.30 ***	0.03
Interpersonal environment	0.22 ***	0.03	0.22 ***	0.03	0.22 ***	0.03
Satisfaction	0.00	0.03	-0.01	0.03	-0.01	0.03
Race/ethnicity						
Hispanic			0.24 ***	0.05	0.37	0.13
Black			0.17 **	0.06	0.06	0.16
Asian			0.10 *	0.04	0.12	0.10
Gender - female	-0.08	0.07	-0.05	0.04	-0.04	0.10
Hispanic : female					-0.10	0.10
Black : female					-0.06	0.13
Asian : female					-0.03	0.09
Level 2 (Institution)						
Campus Environment:						
Institutional Control	-0.03	0.04	0.00	0.04	0.00	0.05
Spiritual and Social	-0.35	0.18	-0.29	0.18	-0.27	0.18
Learning and Dev.	0.64 ***	0.15	0.59 ***	0.15	0.58 ***	0.16

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Institutional Types:						
2	0.18 *	0.08	0.14 *	0.06	0.19	0.13
3	0.10	0.11	0.15	0.08	0.09	0.16
4	0.04	0.07	0.11	0.05	0.01	0.11
5	0.11	0.14	-0.03	0.09	0.18	0.22
6	0.30	0.17	0.19	0.11	0.31	0.22
7	-0.04	0.12	-0.08	0.08	0.04	0.17
8	0.15	0.21	0.17	0.13	0.04	0.36
Female : Type 2	-0.03	0.11			-0.02	0.11
Female : Type 3	0.11	0.14			0.09	0.14
Female : Type 4	0.13	0.10			0.14	0.10
Female : Type 5	-0.14	0.18			-0.22	0.18
Female : Type 6	-0.19	0.21			-0.16	0.21
Female : Type 7	-0.07	0.14			-0.08	0.14
Female : Type 8	0.14	0.27			0.06	0.27
Hispanic : Type 2					-0.15	0.16
Black : Type 2					0.11	0.20
Asian : Type 2					-0.01	0.13
Hispanic : Type 3					-0.06	0.21
Black : Type 3					0.00	0.23
Asian : Type 3					0.12	0.17
Hispanic : Type 4					-0.03	0.15
Black : Type 4					0.22	0.19
Asian : Type 4					0.01	0.12
Hispanic : Type 5					-0.02	0.25
Black : Type 5					-0.07	0.37
Asian : Type 5					-0.31	0.25
Hispanic : Type 6					-0.10	0.31
Black : Type 6					0.37	0.32
Asian : Type 6					-0.22	0.26
Hispanic : Type 7					-0.20	0.26
Black : Type 7					0.26	0.28
Asian : Type 7					-0.14	0.17
Hispanic : Type 8					-0.24	0.39
Black : Type 8					0.69	0.45
Asian : Type 8					0.24	0.44

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.12	0.00	0.00	0.00	0.00
Gender: female	0.01	0.07	0.00	0.00	0.00	0.00
Race/ethnicity:						
Hispanic			0.05	0.23	0.04	0.21
Black			0.05	0.23	0.02	0.15
Asian			0.01	0.12	0.01	0.11
Level 1						
Intercept/Intercept						
Model Fit	0.61	0.78	0.59	0.77	0.59	0.77
AIC	5162		5150		5192	
BIC	5372		5406		5623	
Deviance	5088		5060		5040	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 1-4 Predicting Integration and Consolidation of Diverse Ideas for Seniors

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
	Fixed effects							
Intercept	0.04	0.03	-0.14	0.10	-0.14	0.10	-0.25 *	0.12
Level 1 (Student)								
Age			-0.06	0.04	-0.06	0.04	-0.06	0.04
Transfer Status			0.02	0.04	0.01	0.04	0.02	0.04
Major:								
STEM			-0.15 **	0.05	-0.15 **	0.05	-0.15 **	0.05
Business/Professional			0.10 *	0.05	0.09	0.05	0.09	0.05
Social Sciences/Education			0.02	0.06	0.03	0.06	0.01	0.06
Father's Education:								
Undergraduate			0.02	0.05	0.02	0.05	0.03	0.05
Graduate			0.13 *	0.06	0.13 *	0.06	0.14 *	0.06
Mother's Education:								
Undergraduate			-0.06	0.05	-0.07	0.05	-0.07	0.05
Graduate			-0.02	0.07	-0.03	0.07	-0.04	0.07
Residence			0.10	0.06	0.07	0.06	0.06	0.06
Enrollment Status			0.09	0.06	0.10	0.06	0.13	0.06
Student Perception:								
Support for success			0.31 ***	0.03	0.31 ***	0.03	0.31 ***	0.03
Interpersonal environment			0.12 ***	0.04	0.12 ***	0.03	0.12 ***	0.03
Satisfaction			0.03	0.03	0.03	0.03	0.03	0.03
Race/Ethnicity:								
Hispanic							0.38 **	0.13
Black							0.29	0.17
Asian							0.01	0.10
Level 2 (Institution)								
Campus Environment:								
Institutional Control			0.02	0.04	0.04	0.05	0.07	0.05
Spiritual and Social			-1.29 ***	0.18	-1.16 ***	0.19	-1.15 ***	0.19
Learning and Dev.			1.58 ***	0.16	1.46 ***	0.17	1.46 ***	0.17
Institutional Types:								
2					0.05	0.06	0.11	0.12
3					0.06	0.08	-0.08	0.15
4					0.04	0.06	0.06	0.10
5					0.01	0.10	-0.25	0.21
6					-0.05	0.12	-0.05	0.18

(continued)

Parameters	Model 1		Model 2		Model 3		Model 4	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
7					-0.17 *	0.08	-0.14	0.16
8					0.04	0.14	0.12	0.36
Hispanic : Type 2							-0.24	0.17
Black : Type 2							-0.28	0.22
Asian : Type 2							-0.05	0.14
Hispanic : Type 3							0.04	0.23
Black : Type 3							-0.01	0.25
Asian : Type 3							0.26	0.19
Hispanic : Type 4							-0.11	0.16
Black : Type 4							-0.23	0.21
Asian : Type 4							-0.03	0.13
Hispanic : Type 5							0.25	0.27
Black : Type 5							-0.10	0.40
Asian : Type 5							0.08	0.28
Hispanic : Type 6							-0.08	0.33
Black : Type 6							0.24	0.35
Asian : Type 6							-0.25	0.28
Hispanic : Type 7							-0.24	0.28
Black : Type 7							-0.14	0.31
Asian : Type 7							0.01	0.18
Hispanic : Type 8							-0.49	0.43
Black : Type 8							0.00	0.49
Asian : Type 8							-0.12	0.48
Random parameters								
Level 2	Var	SD	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.05	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Race/ethnicity								
Hispanic							0.00	0.00
Black							0.00	0.00
Asian							0.00	0.00
Level 1								
Intercept/Intercept	0.92	0.96	0.74	0.86	0.74	0.86	0.72	0.85
Model Fit								
AIC	6029		5527		5532		5547	
BIC	6046		5640		5686		5887	
Deviance	6023		5487		5478		5427	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models 5-7 Predicting Integration and Consolidation of Diverse Ideas for Seniors

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	-0.15	0.11	-0.27 *	0.11	-0.30 ***	0.14
Level 1 (Student)						
Age	-0.06	0.04	-0.05	0.04	-0.07	0.04
Transfer Status	0.01	0.04	0.01	0.04	0.02	0.04
Major:						
STEM	-0.14 *	0.06	-0.15 **	0.05	-0.15 **	0.06
Business/Professional	0.08	0.05	0.07	0.05	0.08	0.05
Social Sciences/Education	0.03	0.06	0.00	0.06	0.01	0.06
Father's Education:						
Undergraduate	0.02	0.05	0.03	0.05	0.03	0.05
Graduate	0.14 *	0.06	0.15 *	0.06	0.16 *	0.06
Mother's Education:						
Undergraduate	-0.07	0.05	-0.07	0.05	-0.07	0.05
Graduate	-0.03	0.07	-0.04	0.07	-0.05	0.07
Residence	0.07	0.06	0.06	0.06	0.06	0.06
Enrollment Status	0.11 *	0.05	0.13 *	0.06	0.14 *	0.06
Student Perception:						
Support for success	0.31 ***	0.03	0.31 ***	0.03	0.31 ***	0.03
Interpersonal environment	0.12 ***	0.03	0.12 ***	0.03	0.12 ***	0.03
Satisfaction	0.03	0.03	0.02	0.03	0.03	0.03
Race/ethnicity						
Hispanic			0.28 ***	0.05	0.46 ***	0.14
Black			0.16 *	0.07	0.37 *	0.18
Asian			0.01	0.05	0.04	0.11
Gender - female	0.00	0.08	0.08 *	0.04	0.06	0.10
Hispanic : female					-0.14	0.11
Black : female					-0.17	0.14
Asian : female					-0.04	0.10
Level 2 (Institution)						
Campus Environment:						
Institutional Control	0.03	0.05	0.04	0.05	0.06	0.05
Spiritual and Social	-1.16 ***	0.19	-1.15 ***	0.19	-1.15 ***	0.19
Learning and Dev.	1.48 ***	0.17	1.45 ***	0.17	1.46 ***	0.17

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Institutional Types:						
2	0.03	0.09	0.01	0.06	0.08	0.14
3	-0.02	0.12	0.03	0.08	-0.14	0.17
4	-0.11	0.08	0.01	0.06	-0.09	0.12
5	0.10	0.15	-0.08	0.10	-0.10	0.24
6	0.16	0.18	-0.06	0.12	0.15	0.24
7	-0.19	0.13	-0.16	0.09	-0.16	0.19
8	0.09	0.23	-0.06	0.14	0.17	0.39
Female : Type 2	0.04	0.12			0.04	0.12
Female : Type 3	0.14	0.15			0.11	0.15
Female : Type 4	0.25 *	0.10			0.26 *	0.11
Female : Type 5	-0.14	0.19			-0.26	0.20
Female : Type 6	-0.33	0.23			-0.28	0.23
Female : Type 7	0.03	0.15			0.03	0.15
Female : Type 8	-0.07	0.29			-0.07	0.30
Hispanic : Type 2					-0.23	0.17
Black : Type 2					-0.26	0.22
Asian : Type 2					-0.05	0.14
Hispanic : Type 3					0.03	0.23
Black : Type 3					0.00	0.25
Asian : Type 3					0.27	0.19
Hispanic : Type 4					-0.10	0.16
Black : Type 4					-0.19	0.21
Asian : Type 4					-0.04	0.13
Hispanic : Type 5					0.31	0.27
Black : Type 5					-0.15	0.40
Asian : Type 5					0.07	0.28
Hispanic : Type 6					-0.09	0.33
Black : Type 6					0.19	0.35
Asian : Type 6					-0.28	0.28
Hispanic : Type 7					-0.22	0.28
Black : Type 7					-0.12	0.31
Asian : Type 7					0.01	0.18
Hispanic : Type 8					-0.49	0.43
Black : Type 8					0.06	0.49
Asian : Type 8					-0.12	0.48

(continued)

Parameters	Model 5		Model 6		Model 7	
	Est.	SE	Est.	SE	Est.	SE
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.00
Gender: female	0.00	0.00	0.00	0.00	0.00	0.00
Race/ethnicity:						
Hispanic			0.00	0.00	0.00	0.00
Black			0.00	0.00	0.00	0.00
Asian			0.00	0.00	0.00	0.00
Level 1						
Intercept/Intercept	0.74	0.86	0.73	0.85	0.72	0.85
Model Fit						
AIC	5535		5529		5557	
BIC	5745		5784		5988	
Deviance	5461		5439		5405	

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates For Models Predicting Success For First Years

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
	Fixed effects					
Intercept	3.35 ***	0.09	0.01	0.09	-0.10	0.01
Level 1 (Student)						
Age	0.25 ***	0.06	0.15 *	0.06	0.14 *	0.07
Major	-0.17 *	0.08	0.03	0.08	0.11	0.09
Father's Education:						
Undergraduate	0.05	0.04	-0.02	0.04	-0.05	0.04
Graduate	0.07	0.05	0.03	0.05	-0.01	0.05
Mother's Education:						
Undergraduate	-0.02	0.04	-0.05	0.04	0.01	0.04
Graduate	-0.03 *	0.05	-0.07	0.05	-0.05	0.06
Residence	-0.14 ***	0.03	0.04	0.03	0.02	0.04
Enrollment Status	-0.02	0.07	-0.02	0.07	0.06	0.08
Student Perception:						
Support for success	-0.03	0.02	0.03 ***	0.02	0.36 ***	0.02
Interpersonal environment	0.09 ***	0.02	0.19 ***	0.02	0.13 ***	0.02
Race/Ethnicity:						
Hispanic	-0.18 **	0.07	0.05	0.07	-0.01	0.07
Black	-0.30 ***	0.08	0.10	0.09	0.03	0.09
Asian	0.08	0.06	0.06	0.06	0.08	0.06
Gender - female	0.12 *	0.06	0.06	0.06	0.00	0.06
Hispanic : female	0.02	0.08	0.02	0.09	0.10	0.09
Black : female	0.05	0.11	-0.09	0.11	-0.08	0.12
Asian: female	-0.09	0.07	-0.04	0.07	0.05	0.08
Level of Academic Challenge	0.03	0.05	0.30 ***	0.05	0.02 ***	0.05
Active and Collaborative Learning	0.24	0.14	-0.05	0.14	0.05	0.15
Enriching Educational Experiences	0.08	0.05	0.05	0.05	0.07	0.05
Student-Faculty Interactions	-0.26 *	0.12	0.07	0.12	0.19	0.13
Hispanic: Level of Academic Challenge	0.10	0.07	-0.09	0.07	-0.17	0.08
Black: Level of Academic Challenge	0.18 *	0.09	-0.18	0.09	-0.05	0.10
Asian: Level of Academic Challenge	0.05	0.06	-0.01	0.19	0.04	0.06

(continued)

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
Hispanic: Active and Collaborative	-0.09	0.19	0.04	0.24	0.07	0.21
Black: Active and Collaborative	0.03	0.24	0.40	0.24	0.43	0.26
Asian: Active and Collaborative	-0.23	0.17	0.10	0.17	0.01	0.19
Hispanic: Enriching Educational Experiences	-0.14 *	0.07	-0.06	0.07	0.01	0.07
Black: Enriching Educational Experiences	-0.14	0.10	-0.14	0.10	-0.08	0.10
Asian: Enriching Educational Experiences	-0.09	0.06	0.08	0.06	0.01	0.06
Hispanic: Student/Faculty Interactions	0.10	0.17	0.09	0.17	-0.04	0.18
Black: Student/faculty Interactions	-0.05	0.21	-0.16	0.22	-0.24	0.23
Asian: Student/faculty Interactions	0.26	0.16	-0.05	0.16	-0.07	0.17
Level 2 (Institution)						
Campus Environment:						
Institutional Control	-0.03	0.04	0.01	0.04	-0.01	0.05
Academic	-0.07 ***	0.08	0.31 ***	0.07	0.16	0.09
Spiritual and Social	0.03 *	0.10	0.07	0.09	0.01	0.12
Learning Outcome	-0.01 *	0.11	-0.16	0.11	0.03	0.14
Institutional Types:						
2	0.04	0.05	-0.03	0.05	0.03	0.07
3	0.11	0.08	-0.04	0.07	0.03	0.09
4	0.06	0.05	-0.09 *	0.05	-0.02	0.13
5	0.02	0.07	-0.02	0.07	0.07	0.09
6	0.17	0.11	-0.26 *	0.10	0.24	0.13
7	0.12	0.07	-0.10	0.06	0.10	0.09
8	0.13	0.10	-0.19 *	0.09	0.01	0.12
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.02	0.13
Level 1						
Intercept/Intercept	0.42	0.65	0.43	0.66	0.48	0.69

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates For Models Predicting Success For First Years

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
	Fixed effects			
Intercept	0.03	0.09	-0.11	0.10
Level 1 (Student)				
Age	0.16 *	0.06	0.14 *	0.06
Major	0.01	0.08	0.12	0.08
Father's Education:				
Undergraduate	-0.01	0.04	-0.04	0.04
Graduate	0.04	0.05	-0.03	0.05
Mother's Education:				
Undergraduate	-0.06	0.04	0.01	0.04
Graduate	-0.10	0.05	-0.04	0.05
Residence	0.03	0.03	0.03	0.04
Enrollment Status	-0.02	0.07	0.05	0.07
Student Perception:				
Support for success	0.36 ***	0.02	0.38 ***	0.02
Interpersonal environment	0.19 ***	0.02	0.08 ***	0.02
Race/Ethnicity:				
Hispanic	0.05	0.07	0.04	0.07
Black	0.11	0.08	0.08	0.09
Asian	0.09	0.06	0.13 *	0.06
Gender - female	0.04	0.06	0.04	0.06
Hispanic : female	0.05	0.08	0.03	0.09
Black : female	-0.11	0.11	-0.16	0.12
Asian: female	-0.01	0.07	-0.01	0.08
Level of Academic Challenge	0.03 ***	0.05	0.09	0.05
Active and Collaborative Learning	0.04	0.14	-0.02	0.14
Enriching Educational Experiences	0.03	0.05	0.09	0.05
Student-Faculty Interactions	0.03	0.12	0.19	0.13
Hispanic: Level of Academic Challenge	-0.13	0.06	-0.02	0.08
Black: Level of Academic Challenge	-0.19 *	0.09	-0.12	0.09
Asian: Level of Academic Challenge	-0.01	0.06	0.08	0.06

(continued)

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
Hispanic: Active and Collaborative	0.00	0.19	0.11	0.20
Black: Active and Collaborative	0.32	0.24	0.28	0.25
Asian: Active and Collaborative	0.02	0.17	-0.10	0.18
Hispanic: Enriching Educational Experience	-0.01	0.07	0.01	0.07
Black: Enriching Educational Experience	-0.08	0.10	-0.04	0.10
Asian: Enriching Educational Experiences	-0.05	0.06	0.03	0.06
Hispanic: Student/Faculty Interactions	0.12	0.17	-0.12	0.18
Black: Student/faculty Interactions	-0.10	0.21	-0.16	0.22
Asian: Student/faculty Interactions	-0.01	0.16	0.01	0.16
Level 2 (Institution)				
Campus Environment:				
Institutional Control	0.02	0.04	-0.01	0.05
Academic	0.30 ***	0.07	0.17	0.09
Spiritual and Social	0.13	0.09	0.26 *	0.12
Learning Outcome	-0.19	0.10	-0.09	0.13
Institutional Types:				
2	-0.06	0.05	0.03	0.06
3	-0.08	0.07	0.05	0.09
4	-0.12 *	0.05	-0.06	0.06
5	-0.07	0.07	0.06	0.09
6	-0.30 **	0.10	-0.23	0.12
7	-0.19 **	0.06	-0.12	0.08
8	-0.21 *	0.09	-0.05	0.12
Random parameters				
Level 2	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.02	0.13
Level 1				
Intercept/Intercept	0.42	0.65	0.45	0.67

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models Predicting Success for Seniors

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	3.28 ***	0.08	-0.03	0.09	-0.10	0.10
Level 1 (Student)						
Age	0.00	0.03	0.03	0.04	0.05	0.04
Transfer Status	0.07 *	0.03	-0.06	0.04	-0.09 *	0.04
Major						
STEM	-0.04	0.04	0.06	0.05	-0.08	0.05
Business/Professional	-0.08 *	0.03	0.10 **	0.04	0.10 *	0.04
Social Sciences/Education	-0.01	0.04	0.13 **	0.05	0.13 *	0.05
Father's Education:						
Undergraduate	-0.01	0.03	0.01	0.04	0.02	0.04
Graduate	0.12 **	0.04	-0.02	0.05	0.03	0.06
Mother's Education:						
Undergraduate	0.02	0.03	-0.06	0.04	-0.06	0.04
Graduate	0.06	0.05	-0.09	0.06	-0.14 *	0.06
Residence	-0.03	0.04	0.01	0.05	0.00	0.05
Enrollment Status	0.09 *	0.04	0.01	0.05	-0.04	0.05
Student Perception:						
Support for success	-0.09 ***	0.02	0.42 ***	0.03	0.53 ***	0.03
Interpersonal environment	0.14 ***	0.02	0.18 ***	0.03	0.11 ***	0.03
Race/Ethnicity:						
Hispanic	-0.14 *	0.06	0.11	0.07	0.18 *	0.08
Black	-0.24 ***	0.07	0.14	0.08	0.21 *	0.09
Asian	-0.05	0.05	-0.02	0.06	0.15 *	0.07
Gender - female	0.14 ***	0.05	-0.05	0.06	-0.05	0.07
Hispanic : female	-0.08	0.08	0.08	0.09	0.04	0.10
Black : female	-0.05	0.09	0.04	0.11	-0.15	0.12
Asian: female	0.01	0.06	0.11	0.08	0.08	0.10
Level of Academic Challenge	0.04	0.03	0.16 ***	0.04	0.09	0.05
Active and Collaborative Learning	-0.02	0.06	0.02	0.11	0.27	0.08
Enriching Educational Experiences	0.11 *	0.05	0.04	0.05	0.07	0.06
Student-Faculty Interactions	-0.02	0.06	-0.12	0.08	-0.13	0.08
Integrat-/Consolidation of Diverse Ideas	0.01	0.06	0.26 ***	0.08	0.34 ***	0.08

(continued)

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
Hispanic: Level of Academic Challenge	-0.06	0.06	0.02	0.07	0.09	0.07
Black: Level of Academic Challenge	0.00	0.07	0.02	0.08	0.15	0.09
Asian: Level of Academic Challenge	0.01	0.05	0.05	0.06	0.04	0.06
Hispanic: Active and Collaborative	0.21	0.09	0.01	0.11	0.00	0.12
Black: Active and Collaborative	0.10	0.11	-0.10	0.14	-0.30	0.15
Asian: Active and Collaborative	0.01	0.08	-0.03	0.10	-0.07	0.11
Hispanic: Enriching Educational Experience	-0.05	0.06	-0.17 *	0.08	-0.12	0.08
Black: Enriching Educational Experience	0.01	0.08	-0.12	0.10	-0.10	0.11
Asian: Enriching Educational Experience	-0.07	0.06	-0.07	0.07	0.02	0.08
Hispanic: Student/Faculty Interactions	-0.11	0.09	0.06	0.11	0.06	0.12
Black: Student/faculty Interactions	-0.03	0.11	0.07	0.13	0.17	0.14
Asian: Student/faculty Interactions	0.09	0.08	-0.03	0.10	-0.06	0.11
Hispanic: Integrat-/Consolidation of Ideas	0.02	0.09	-0.15	0.11	0.00	0.12
Black: Integrat-/Consolidation of Ideas	0.12	0.12	-0.27	0.14	-0.05	0.15
Asian: Integrat-/Consolidation of Ideas	-0.06	0.08	0.01	0.10	-0.24	0.15
Level 2 (Institution)						
Institutional Control	0.01	0.03	0.03	0.04	0.01	0.04
Spiritual and Social Learning Outcome	-0.29 *	0.13	-0.16	0.18	0.08	0.20
Institutional Types:						
2	-0.05	0.04	-0.03	0.05	0.06	0.06
3	0.03	0.06	-0.06	0.07	0.00	0.08
4	0.04	0.04	-0.02	0.05	0.06	0.05
5	-0.01	0.07	-0.02	0.08	-0.03	0.09
6	-0.01	0.08	-0.22 *	0.10	-0.09	0.11
7	-0.04	0.06	-0.02	0.07	0.04	0.08
8	0.09	0.10	-0.10	0.12	0.03	0.13
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.00	0.00	0.00	0.00	0.00	0.00
Level 1						
Intercept/Intercept	0.34	0.59	0.48	0.69	0.58	0.76

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Estimates for Models Predicting Success for Seniors

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
Fixed effects				
Intercept	-0.07	0.09	-0.04	0.09
Level 1 (Student)				
Age	0.02	0.03	0.04	0.03
Transfer Status	-0.06	0.03	-0.07	0.03
Major				
STEM	0.15	0.04	-0.07	0.05
Business/Professional	0.13 ***	0.04	0.08 *	0.04
Social Sciences/Education	0.07 ***	0.05	0.10 *	0.05
Father's Education:				
Undergraduate	0.01	0.04	0.04	0.04
Graduate	-0.03	0.05	0.02	0.05
Mother's Education:				
Undergraduate	-0.05	0.04	-0.06	0.04
Graduate	-0.06	0.05	-0.14 **	0.06
Residence	0.05	0.05	-0.02	0.05
Enrollment Status	0.02	0.04	-0.06	0.05
Student Perception:				
Support for success	0.38 ***	0.02	0.45 ***	0.03
Interpersonal environment	0.17 ***	0.02	0.06 **	0.03
Race/Ethnicity:				
Hispanic	0.04	0.07	0.14 *	0.07
Black	0.15	0.08	0.14	0.08
Asian	0.01	0.06	0.13 *	0.06
Gender - female	-0.08	0.06	-0.06	0.06
Hispanic : female	0.09	0.09	0.03	0.09
Black : female	0.03	0.11	-0.14	0.11
Asian: female	0.12	0.07	0.06	0.07
Level of Academic Challenge	0.15 ***	0.04	0.03	0.04
Active and Collaborative Learning	0.29 ***	0.07	-0.13 *	0.11
Enriching Educational Experiences	-0.01	0.05	0.10	0.05
Student-Faculty Interactions	-0.13	0.07	0.00	0.08
Integrat-/Consolidation of Diverse Ideas	0.01	0.06	0.26 ***	0.08

(continued)

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
Hispanic: Level of Academic Challenge	0.02	0.06	0.06	0.07
Black: Level of Academic Challenge	0.04	0.08	0.17 *	0.08
Asian: Level of Academic Challenge	0.04	0.05	0.05	0.06
Hispanic: Active and Collaborative	0.00	0.11	-0.07	0.16
Black: Active and Collaborative	-0.07	0.13	-0.12	0.14
Asian: Active and Collaborative	0.01	0.09	-0.10	0.10
Hispanic: Enriching Educational Experience	-0.08	0.07	-0.09	0.08
Black: Enriching Educational Experience	-0.11	0.10	-0.03	0.10
Asian: Enriching Educational Experiences	-0.03	0.06	0.06	0.07
Hispanic: Student/Faculty Interactions	0.04	0.11	0.07	0.11
Black: Student/faculty Interactions	0.05	0.13	0.13	0.13
Asian: Student/faculty Interactions	-0.11	0.09	-0.03	0.10
Hispanic: Integrat-/Consolidation of Ideas	-0.11	0.10	0.09	0.11
Black: Integrat-/Consolidation of Ideas	-0.19	0.13	-0.15	0.14
Asian: Integrat-/Consolidation of Ideas	0.04	0.09	-0.06	0.10
Level 2 (Institution)				
Institutional Control	0.01	0.04	0.03	0.04
Spiritual and Social	-0.07	0.17	0.41 **	0.16
Learning Outcome	0.20	0.18	-0.26	0.14
Institutional Types:				
2	-0.05	0.05	0.09	0.05
3	-0.11	0.07	0.03	0.07
4	-0.03	0.04	0.06	0.05
5	0.03	0.08	0.00	0.08
6	-0.26 **	0.09	-0.02	0.10
7	-0.12	0.07	0.01	0.07
8	-0.12	0.11	0.02	0.12
Random parameters				
Level 2	Var	SD	Var	SD
Intercept/intercept	0.01	0.08	0.00	0.00
Level 1				
Intercept/Intercept	0.43	0.66	0.49	0.70

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges -
* p < .05, ** p < .01, *** p < .001

Relationship Between Institutional Factors and Success for First Year International Students

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
Intercept	3.33 ***	0.11	-0.11	0.12	-0.22	0.12
Level 1 (Student)	Fixed effects					
Control Variables ^b						
Race/Ethnicity:						
Hispanic	-0.20	0.12	0.09	0.13	0.13	0.14
Black	-0.64 ***	0.19	0.25	0.20	0.26	0.21
Asian	0.09	0.10	0.15	0.10	0.20	0.11
Gender - female	0.13 *	0.06	0.06	0.06	0.04	0.06
Hispanic : female	0.03	0.09	0.05	0.09	0.12	0.09
Black : female	0.03	0.12	-0.13	0.12	-0.11	0.12
Asian: female	-0.10	0.07	-0.06	0.08	-0.01	0.08
Level 2 (Institution)						
Campus Environment:						
Institutional Control	0.04	0.07	0.10	0.08	0.13	0.08
Academic Expectations	-0.03	0.14	0.63 ***	0.14	0.64 ***	0.15
Spiritual and Social	-0.33 *	0.17	-0.01	0.18	-0.21	0.20
Learning and Development	0.22	0.20	0.30	0.21	0.30	0.23
Institutional Types:						
2	0.03	0.10	-0.03	0.11	0.11	0.12
3	0.03	0.13	-0.13	0.14	-0.17	0.15
4	0.00	0.09	-0.07	0.10	-0.07	0.11
5	-0.11	0.14	-0.12	0.14	-0.03	0.16
6	0.18	0.18	-0.52 **	0.19	-0.64 ***	0.20
7	-0.04	0.13	-0.26	0.14	-0.17	0.15
8	0.15	0.19	-0.26	0.20	0.07	0.22
Hispanic : Type 2	0.01	0.16	-0.01	0.16	-0.26	0.17
Black : Type 2	0.40	0.23	-0.25	0.24	-0.37	0.26
Asian : Type 2	-0.06	0.12	-0.03	0.13	-0.07	0.14
Hispanic : Type 3	0.05	0.21	0.08	0.22	0.12	0.23
Black : Type 3	0.20	0.30	-0.10	0.31	0.08	0.34
Asian : Type 3	0.16	0.18	0.03	0.19	0.23	0.20
Hispanic : Type 4	0.12	0.15	-0.05	0.15	-0.05	0.16
Black : Type 4	0.21	0.21	-0.26	0.22	-0.11	0.24
Asian : Type 4	0.02	0.11	-0.22	0.12	-0.25	0.12
Hispanic : Type 5	0.13	0.20	0.03	0.21	0.03	0.22
Black : Type 5	0.53	0.27	-0.28	0.28	-0.23	0.31

(continued)

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
Asian : Type 5	0.18	0.18	0.16	0.19	0.33	0.20
Hispanic : Type 6	0.01	0.32	0.42	0.33	0.75 *	0.35
Black : Type 6	0.22	0.33	0.15	0.33	0.97 **	0.33
Asian : Type 6	0.07	0.31	-0.13	0.33	0.78 *	0.35
Hispanic : Type 7	0.33	0.23	0.35	0.24	0.10	0.25
Black : Type 7	0.44	0.28	0.08	0.29	0.15	0.31
Asian : Type 7	0.12	0.16	0.09	0.17	0.23	0.18
Hispanic : Type 8	-0.01	0.26	0.17	0.27	-0.07	0.29
Black : Type 8	0.24	0.32	-0.35	0.34	-0.38	0.36
Asian : Type 8	-0.03	0.26	0.12	0.28	0.17	0.30
Hispanic : Institutional Control	-0.15	0.12	-0.14	0.12	-0.16	0.13
Black : Institutional Control	0.13	0.16	0.08	0.16	0.01	0.17
Asian : Institutional Control	-0.11	0.10	-0.10	0.10	-0.20	0.11
Hispanic : Academic	0.08	0.21	-0.29	0.22	-0.50 *	0.23
Black : Academic	-0.24	0.29	-0.43	0.29	-0.56	0.32
Asian : Academic	-0.09	0.18	-0.25	0.20	-0.49 *	0.21
Hispanic : Spiritual and Social	0.32	0.27	0.06	0.28	-0.10	0.30
Black : Spiritual and Social	0.22	0.37	-0.25	0.38	-0.39	0.41
Asian : Spiritual and Social	0.56 *	0.22	-0.01	0.24	0.14	0.25
Hispanic : Learning and Development	-0.09	0.33	-0.06	0.34	0.61	0.36
Black : Learning and Development	-0.40	0.38	0.15	0.39	0.76	0.42
Asian : Learning and Development	-0.29	0.26	-0.08	0.27	0.24	0.29
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.08	0.01	0.11	0.01	0.10
Race/ethnicity:						
Hispanic	0.02	0.12	0.00	0.00	0.01	0.08
Black	0.02	0.15	0.01	0.10	0.04	0.19
Asian	0.01	0.09	0.00	0.03	0.00	0.07
Level 1						
Intercept/Intercept	0.41	0.64	0.49	0.70	0.53	0.73

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Relationship between Institutional Factors and Success for First Year International Students

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
Fixed effects				
Intercept	-0.11	0.12	-0.30 **	0.12
Level 1 (Student)				
Control Variables ^b				
Race/Ethnicity:				
Hispanic	0.13	0.13	0.29 *	0.13
Black	0.26	0.20	0.40	0.21
Asian	0.20 *	0.10	0.25 *	0.10
Gender - female	0.04	0.06	0.03	0.06
Hispanic : female	0.12	0.09	0.05	0.09
Black : female	-0.11	0.12	-0.21	0.13
Asian: female	-0.01	0.08	-0.02	0.08
Level 2 (Institution)				
Campus Environment:				
Institutional Control	0.09	0.08	0.09	0.08
Academic Expectations	0.68 ***	0.15	0.57 ***	0.15
Spiritual and Social	0.07	0.18	0.18	0.19
Learning Outcome	-0.25	0.21	-0.26	0.22
Institutional Types:				
2	-0.05	0.11	0.15	0.11
3	-0.17	0.14	-0.12	0.15
4	-0.06	0.10	-0.02	0.10
5	-0.16	0.14	-0.01	0.15
6	-0.66 **	0.19	-0.63 **	0.20
7	-0.36 **	0.14	-0.19	0.15
8	-0.29	0.20	0.11	0.21
Hispanic : Type 2	-0.09	0.16	-0.36 *	0.17
Black : Type 2	-0.23	0.24	-0.49	0.26
Asian : Type 2	0.00	0.13	-0.09	0.13
Hispanic : Type 3	0.18	0.22	0.00	0.22
Black : Type 3	-0.04	0.32	0.13	0.34
Asian : Type 3	-0.01	0.19	0.21	0.19
Hispanic : Type 4	-0.10	0.15	-0.21	0.15
Black : Type 4	-0.21	0.22	-0.25	0.24
Asian : Type 4	-0.20	0.12	-0.07	0.12
Hispanic : Type 5	0.00	0.21	-0.09	0.21
Black : Type 5	-0.24	0.28	-0.39	0.31

(continued)

Parameters	Practical Competence		Civic and Democratic	
	Est.	SE	Est.	SE
Asian : Type 5	0.17	0.19	0.29	0.19
Hispanic : Type 6	0.66 *	0.33	0.53	0.33
Black : Type 6	0.55	0.32	0.63	0.37
Asian : Type 6	0.14	0.33	0.15	0.34
Hispanic : Type 7	0.36	0.24	-0.08	0.24
Black : Type 7	0.14	0.29	0.05	0.32
Asian : Type 7	0.14	0.17	0.13	0.17
Hispanic : Type 8	0.23	0.27	-0.31	0.27
Black : Type 8	-0.28	0.34	-0.67	0.37
Asian : Type 8	0.13	0.28	-0.04	0.28
Hispanic : Institutional Control	-0.13	0.12	-0.08	0.12
Black : Institutional Control	0.13	0.16	-0.06	0.17
Asian : Institutional Control	-0.11	0.10	-0.18	0.11
Hispanic : Academic	-0.40	0.22	-0.51 *	0.22
Black : Academic	-0.44	0.30	-0.58	0.32
Asian : Academic	-0.30	0.19	-0.37	0.20
Hispanic : Spiritual and Social	-0.06	0.28	-0.03	0.29
Black : Spiritual and Social	-0.56	0.39	-0.16	0.42
Asian : Spiritual and Social	-0.01	0.23	0.03	0.24
Hispanic : Learning and Development	0.24	0.34	0.51	0.34
Black : Learning and Development	0.70	0.40	0.62	0.43
Asian : Learning and Development	0.13	0.27	0.31	0.28
Random parameters				
Level 2	Var	SD	Var	SD
Intercept/intercept	0.01	0.08	0.01	0.09
Race/ethnicity:				
Hispanic	0.00	0.01	0.00	0.03
Black	0.02	0.14	0.04	0.21
Asian	0.00	0.02	0.00	0.05
Level 1				
Intercept/Intercept	0.48	0.69	0.49	0.70

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

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

Relationship between Institutional Factors and Success for Senior International Students

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
Fixed effects						
Intercept	3.20 ***	0.09	-0.14	0.11	-0.16	0.12
Level 1 (Student)						
Control Variables ^b						
Race/Ethnicity:						
Hispanic	-0.13	0.10	0.16	0.13	0.26	0.14
Black	-0.33 *	0.13	0.22	0.16	0.12	0.17
Asian	0.06	0.08	-0.03	0.10	0.15	0.11
Gender - female	0.14 **	0.05	0.02	0.06	0.00	0.07
Hispanic : female	-0.07	0.08	0.00	0.10	-0.02	0.10
Black : female	-0.10	0.09	-0.05	0.12	-0.21	0.13
Asian : female	0.03	0.07	0.07	0.05	0.06	0.09
Level 2 (Institution)						
Institutional Control	-0.05	0.06	0.12	0.08	0.18 *	0.08
Spiritual and Social	-0.09	0.27	-0.09	0.30	0.05	0.32
Learning and Development	0.16	0.30	0.65	0.26	0.22	0.40
Institutional Types:						
2	0.05	0.09	-0.02	0.10	0.05	0.11
3	0.21	0.11	-0.19	0.14	-0.25	0.14
4	0.09	0.08	-0.02	0.09	0.04	0.10
5	0.16	0.16	-0.37	0.20	-0.46 *	0.21
6	0.05	0.14	-0.39 *	0.16	-0.28	0.17
7	0.17	0.12	-0.37 **	0.15	-0.36 *	0.16
8	0.01	0.26	-0.43	0.32	-0.43	0.34
Hispanic : Type 2	-0.06	0.13	0.08	0.16	0.03	0.17
Black : Type 2	0.16	0.17	0.09	0.21	0.27	0.22
Asian : Type 2	-0.18	0.11	-0.11	0.13	-0.10	0.14
Hispanic : Type 3	-0.30	0.18	0.38	0.23	0.40	0.24
Black : Type 3	0.27	0.21	0.04	0.27	0.51	0.28
Asian : Type 3	-0.33 *	0.15	0.18	0.18	0.33	0.19
Hispanic : Type 4	0.02	0.12	0.13	0.15	0.05	0.16
Black : Type 4	0.18	0.16	-0.17	0.20	0.07	0.21
Asian : Type 4	-0.13	0.10	-0.04	0.12	-0.01	0.12
Hispanic : Type 5	-0.21	0.20	0.45	0.25	0.42	0.26
Black : Type 5	-0.19	0.31	0.49	0.39	0.49	0.42

(continued)

Parameters	Cumulative GPA		General Education		Personal and Social	
	Est.	SE	Est.	SE	Est.	SE
Asian : Type 5	-0.21	0.20	0.51 *	0.26	0.72 **	0.27
Hispanic : Type 6	-0.02	0.24	0.11	0.31	0.19	0.32
Black : Type 6	0.39	0.27	0.56	0.34	0.76 *	0.33
Asian : Type 6	-0.10	0.22	0.06	0.28	0.00	0.29
Hispanic : Type 7	-0.28	0.21	0.51 *	0.26	0.60 *	0.28
Black : Type 7	0.06	0.24	0.56	0.31	0.71 *	0.32
Asian : Type 7	-0.33 *	0.14	0.35 *	0.18	0.42 *	0.19
Hispanic : Type 8	-0.03	0.31	0.49	0.39	0.66	0.41
Black : Type 8	0.53	0.35	0.38	0.44	0.32	0.46
Asian : Type 8	0.02	0.34	0.02	0.43	0.51	0.45
Hispanic : Institutional Control	0.15	0.10	-0.22	0.12	-0.30 *	0.13
Black : Institutional Control	-0.01	0.12	-0.12	0.16	-0.31	0.16
Asian : Institutional Control	0.08	0.09	-0.03	0.11	-0.16	0.11
Hispanic : Spiritual and Social	-0.54	0.37	0.09	0.53	0.35	0.56
Black : Spiritual and Social	0.59	0.48	0.30	0.66	0.99	0.70
Asian : Spiritual and Social	-0.37	0.37	-0.49	0.48	-0.55	0.50
Hispanic : Learning and Development	0.50	0.32	-0.38	0.57	-0.44	0.60
Black : Learning and Development	-0.22	0.42	-0.63	0.67	-0.88	0.71
Asian : Learning and Development	0.22	0.29	-0.10	0.52	0.28	0.55
Random parameters						
Level 2	Var	SD	Var	SD	Var	SD
Intercept/intercept	0.01	0.08	0.00	0.00	0.00	0.00
Race/ethnicity:						
Hispanic	0.00	0.04	0.00	0.00	0.00	0.00
Black	0.00	0.04	0.00	0.00	0.00	0.00
Asian	0.01	0.07	0.00	0.00	0.00	0.00
Level 1						
Intercept/Intercept	0.35	0.59	0.56	0.75	0.64	0.80

Note. Est = estimate, SE = standard error, Var = variance component, SD = standard deviation, Institutional Type 2 = research university (high activity), 3 = doctoral university/research, 4 = large programs at masters colleges and universities, 5 = medium programs at masters colleges and universities, 6 = small programs at masters colleges and universities, 7 = baccalaureate colleges - Liberal Arts, 8 = baccalaureate colleges - Diverse fields.

^b Control variables include: age, major, father's education, mother's education, residence, enrollment status, support for student success, interpersonal environment, institutional control, academic expectation, spiritual and social expectation, and learning and development

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