A Critical Quantitative Examination of the Relationship between Constructs of Engagement and Latino College Completion

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Dedication

In loving memory of Raymond Allen Brady, thank you for your quiet support and love. Although you are not here to see this journey completed, I know you would have been proud. For Mary Ellen North, your love, physical, and emotional support have made this possible. Thank you for the many hours you listened, read, and offered advice through this tumultuous journey. I will be forever grateful and dedicate the culmination of my doctoral work to you both.

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Abstract of Dissertation

A Critical Quantitative Examination of the Relationship between Constructs of Engagement and Latino College Completion

Investigating the validity and applicability of student success theories for minority students uncovers the nuance and context of student experiences. This study examines the validity and applicability of student engagement and involvement for Latino students. Specifically, this study employs a critical quantitative lens to question current constructs of engagement. The dataset for this study comes from the 2013 UNC Sophomore Survey and research questions are grounded in the context of public universities in North Carolina. Exploratory Factor Analysis and Logistic Regression methodologies are employed to investigate the research question, is there a relationship (and to what extent) between hypothesized constructs of engagement, socio-economic status, and academic preparation on Latino baccalaureate completion.

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Chapter I: Introduction

Enrollment growth of the traditional student population is slowing in the United States. Demographic shifts are decreasing the pool of what was once the dominant population of college-goers. Krogstad and Fry (2014), of the Pew Research Center, reported that between 1996 and 2012, Latino college enrollment increased 240%; the largest percentage gain of any racial or ethnic group. The college enrollment rate of Latino 18-24 year olds outpaced that of whites 49% to 47% for the first time in 2012. Although Latino students are enrolling in post-secondary education at higher rates, they are not achieving a baccalaureate degree at the same rate of other racial/ethnic groups. The National Center for Education Statistics (2013) reported that of the students who started college in the 2006 cohort, only 29% of first-time full-time Latino students complete a four-year post-secondary degree in four years. Between the entering 2006 and 2008 cohorts, this four-year graduation rate only changed by one percentage point. White students entering college in the 2006 cohort had a 43% graduation rate in four-years and Asians had a 46% graduation rate. White students entering college in the 2008 cohort had a 43.7% graduation rate and Asians had a 47.7% graduation rate. The four-year benchmark is particularly important for this study because a four-year graduation rate is examined as the outcome variable. In addition to four-year graduation, persistence towards a degree will also be examined. However, it is also important to benchmark six-year graduation rates as well due to the growing number of students who are non-traditional and attend part-time. For the 2006 cohort, 51.9% of Latinos graduate with a

four-year degree in 6-years as compared to 62.5% of whites (2016 Digest of Education Statistics).

Four and six year graduation rates are problematic however since they exclude students who transfer away from the initial institution of enrollment and complete their degrees at another institution. To be more fully explored later in this study, exclusion of transfer students becomes particularly problematic when researching Latino student success because Latino students disproportionately enroll in two-year institutions and therefore their four and six year graduation rates may not be reflective of the number of Latinos who complete a college degree through transfer. In order to gain a clearer understanding of the state of Latino college completion and student success, it is important to examine other data points such as educational attainment as a percentage of the population and population growth. By examining these other data the assertion that Latinos are not achieving baccalaureate degrees at the same rate as other racial/ethnic groups is supported. Latinos lag behind the rest of the country educationally with only 10% of the Latino population obtaining a baccalaureate degree in 2000. By 2013 the percentage of the Latino population obtaining a baccalaureate degree increased to 15% (Nora, A. and Crisp, G., 2009). Although this particular increase is positive, it is not enough to keep pace with the growing population. In fact, between 1995 and 2015, the percentage gap of 25 to 29 year old Latinos who had attained a bachelor's degree as compared to whites widened from 20%-27% (National Center for Education Statistics, 2016).

Attainment rates for Latinos can, in part, be attributed to their enrollment patterns. Researchers have shown that there are significant differences in the rates at which Latino students are enrolling in four-year institutions. Latinos are more likely to attend a two-year institution or a less selective four-year institution and are more likely to attend part-time. Students with these enrollment patterns have been identified by researchers to be at greater risk of not completing a baccalaureate degree. Latino students who are able to attend a four-year institution face significant barriers to completion. The Education Advisory Board (2014) reports that 78% percent of Latino students are first-generation college students, 62% of students come from families living at or below the poverty line, and 49% complete a higher education credential after 6 years of enrollment. Regardless of institutional type, numerous scholars have shown that the combination of being a first generation college student and a low-income student negatively affects persistence and completion (Choy, 2001; Nunez & Cuccaro-Alamin, 1998; McCarron & Inkelas, 2006; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Terenzini, Springer, Yeager, Pascarella, & Nora, A., 1996). Pascarella et al (2004), Crisp, Nora, & Taggart (2009), and Merisotis and McCarthy (2005) note that first-generation college students are at a greater risk for being academically, socially, and economically left behind and that Latino students specifically are more likely to come from academically disadvantaged backgrounds (as measured by SAT scores). Academic preparation is an important factor contributing to academic success in college. The inequity present in the area of academic preparation perpetuates the inequities in post-secondary completion and contributes to lower expectations for academic achievement.

In order to complete a four-year degree, one must first overcome barriers associated with enrollment. Latino students often have economic, cultural, and social barriers to overcome in order to access higher education (Nora & Crisp, 2008; Zarate & Gallimore, 2005). Gibbons and Borders (2010) found that like many first-generation college students, Latino students have lower levels of self-efficacy, a greater number of perceived barriers to attending college, and lower positive outcome expectations as related to college-going. In addition, Latino students perceived less support from school personnel and greater negative college-going outcome expectations than other racial or ethnic groups. Gonzalez, Stoner, and Joval's work (2003) specifically examined Latino students' relationships between school personnel and families. The lack of social capital experienced by Latinos impacts the student's actual and/or perceived access to college. Latino students and families often lack the social capital necessary to obtain the knowledge and guidance to access higher education. This is consistent with the literature examining first-generation college students as a whole.

Despite the challenges, the number of Latino students accessing some form of higher education and completing a baccalaureate degree is increasing. Examining the contributing variables of Latinos who have achieved a baccalaureate degree will help further the research and understanding of how best to support this growing population and may provide insights on how to support the ever diversifying population of college students. Utilizing the frameworks and theories of student retention and persistence (Tinto, 1993), student engagement (Kuh, 2001, 2003, 2009; Astin, 1984), and sense of belonging (Hurtado, Carter, & Spuler, 1996; Hoffman, Richmond, Morrow, & Salomone,

2003; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Scholssberg, Lynch, Chickering, 1989; Tucker, 1999). The purpose of this dissertation is to examine Latino college completion in the contexts of engagement and to better understand the relationship between the two.

Purpose of the Study

Within the context of inequities in completion between racial and ethnic groups, growing diversity within America's college-going population, and the theoretical perspectives of engagement and sense of belonging, this study seeks to expand the growing body of literature on Latino student success and the variables that contribute to baccalaureate degree completion. Specifically, the purpose of this study is to examine whether traditional definitions and constructs of engagement hold in a Latino cultural context. This will be accomplished through analyzing the extent to which variables related to socio-economic status, academic preparation, and different types engagement are related to completing a baccalaureate degree at a four-year public university, explicitly for Latino students. If a relationship is identified, the variables and their combinations will be examined to determine which are more highly predictive of completion or persistence.

Notably, this study does not seek to predict or make inferences back to the population. This study utilizes a population sample, drawn from the 2013 University of North Carolina (UNC) Sophomore Survey administered biannually to all sophomore students enrolled at a UNC constituent university who have completed between 24 and 35 semester credit hours. The specific survey responses utilized for this study are taken

from the 2013 administration and the enrollment or degree completion status of these students is already known. Therefore, the goal of this study is to examine descriptively, the extent to which (if at all) different demographic variables and in combination with different dimensions of engagement, independently and taken together, contribute to baccalaureate degree completion for Latino students.

Statement of the Problem

College attainment has been identified by the Obama Administration, the Lumina Foundation, and others as an important goal for global competitiveness and economic growth in America. The identified attainment goals require that a broader demographic of student enter and succeed in post-secondary education. Because the largest increase in population growth is expected to be among Latinos, it is impossible to reach the national attainment goals without increasing participation and completion rates among the people within this demographic. The Lumina Foundation calls for the total number of enrollment of Latino students to increase by 7% each year through 2025 in order to reach these attainment goals. Not only does enrollment of this population need to increase, but six-year completion should increase to 60% by 2025 (Matthews, 2014). In order to reach these goals and close the completion gap, it is imperative that we understand the variables contributing to Latino post-secondary completion. As previously stated, although enrollment rates of Latino students are increasing, they are attending four-year colleges at lower rates than other racial and ethnic groups. Not only are they attending at lower rates, but their graduation rates are among the lowest of all racial and ethnic groups. The Department of Education's report (National Center for Education Statistics, 2013) that

the fall 2012 six-year graduation rate for all first-time, full-time freshman entering four year institutions in the fall of 2006 was 59%. When disaggregating attainment by race it is clear that African-American, Native American, and Latino students have the lowest graduation rates of all ethnic/racial groups. Although Latino graduation rates are increasing, they are not increasing enough as a percentage of the overall Latino population with a baccalaureate degree to result in the attainment levels called for by the national completion agenda.

In North Carolina specifically, Latino students represent increased proportions of enrollment in the UNC system, as well as higher education enrollments overall. In the fall of 2013, 10,440 (4.7% of total enrollment) Latino students enrolled at UNC campuses. These students accounted for 5.2% of undergraduate enrollment and 3.2% of graduate enrollment. Latino student enrollment has grown dramatically over the years at UNC campuses, increasing 339.2% since 2000 and 995.5% since 1990. Following general population trends in North Carolina, Latino students will constitute an increasingly large percentage of the college-going population. Among North Carolinians who will reach college age in the next 14 years, Latino students show the greatest projected increase in student population (+62%) when compared to the population growth of white (-11.5%), African American, (-10.2%), and others racial/ethnic student groups (+27.5%). As the population of Latinos continues to grow in North Carolina, and around the country, States must face how their policies are (or are not) facilitating access and equality for the Latino population. For these reasons, the decision to focus on Latino academic achievement is both timely and necessary (United States Census Bureau, 2010).

Latino students are more likely to come from low-income families which increases the risk of not attaining a baccalaureate degree (Merisotis, & McCarthy, 2005; Nunez & Bowers, 2011). Contributing to lower median family incomes, Latinos have the lowest per capita degree percentage of all racial/ethnic groups. The 2014 Census indicates the median family income for Hispanic families was $42,491 as compared to a median family income of $60,256 for white families and $53,657 for all races. The poverty rate of Latinos was 23.6% as compared to 10.1% for whites (De Nasvas-Walt & Proctor, 2015). Degree attainment and family income are directly related. The difference in lifetime earnings between a four-year degree holder and a high school graduate is 66%. In other words, college graduates can expect to earn 66% more over their working lives than students with only a high school diploma (Baum, Ma, & Payea, 2013). As the demand for better educated workers increases, degree attainment is necessary in order to achieve greater levels of economic stability for the Latino population. Unless college attainment continues to increase exponentially for Hispanic students, they will not be able to close the income and employment gap that currently exists and their poverty rate will rise (Nora & Crisp, 2009).

Contributing to low attainment and degree completion rates for Latino students are the barriers of being more likely to be first-generation college students, attend nonselective institutions, and attend part-time in addition to other cultural and environmental factors. Each of these characteristics presents their own challenges. Many Latino students face a combination or all of these challenges, making their pathway toward graduation more difficult than other demographic groups. Therefore, these

students require a unique combination of intervention and retention strategies which must be developed and delivered in a culturally cognizant way. Understanding the variables that contributed to the success of degree completers is important to developing strategies that will be relevant for future students. As the challenges of access are met and more students have the opportunity to participate in post-secondary education, higher education professionals are obligated to ensure that proper pathways are present to facilitate student success.

It should be noted that other minority groups experience some of the same disparities in regards to access to higher education and degree attainment as Latinos. African-American, Native American, and Alaska Natives as well as certain Asian populations also come from low socio-economic backgrounds, are underprepared to attend college, and have low percentages of degree holders within their populations. However, due to the unique demographic shift taking place in North Carolina and the need for higher education practitioners and policy-makers to address the needs of this growing population, this study will focus on Latinos.

Theoretical/Conceptual Framework

Conceptually, this study is guided by a critical quantitative orientation to the research problem, questions, and methodological approach. Just as interventions and solutions for degree attainment should be identified and delivered in culturally relevant ways, the research to support them should be approached similarly. Critical quantitative research is defined as using quantitative data to address social justice issues. Rather than

confirming previous research findings, a quantitative criticalist "seeks to forge challenges, illuminate conflict, and develop critique through quantitative methods in an effort to move theory, knowledge, and policy to a higher plane" (Stage, 2007).

Critical quantitative research is based in the tenets of critical theory which are the desire to understand the experiences of individuals and groups in the context of cultural constraints and societal prescriptions, recognition of the importance of power in structuring human subjectivity and the importance of cultural difference, the investigation of the ways in which science and knowledge are defined and changed and finally extending theory into action (Tierney and Rhoads, 1993). Therefore, a goal of critical research is to "uncover the contradictions and negations embodied in any objective description" (Kincheloe and Mclaren, 1994). Critical theory seeks to question ideological practices to challenge previously held beliefs and to do more than merely confirm or rewrite what research has already confirmed.

Stage (2007) notes that the critical quantitative researcher has two tasks, "to use data to represent educational processes and outcomes on a large scale to reveal inequities and to identify social or institutional perpetuation of systematic inequities in such processes and outcomes" and to, "question models, measures, and analytic practices of quantitative research to offer competing models, measures, and analytic practices that better describe experiences of those who have not been adequately represented." The aim of this study is to identify the unique relationship between engagement constructs and completion for Latino students. It will therefore challenge previously held notions about definitions of "engagement" and the relevancy of those definitions for Latinos. Through

this examination, the researcher seeks to offer an alternative means of conceptualizing Latino engagement in higher education and its relationship to completion thereby providing recommendations for practice that will be more relevant for Latinos.

This study will also draw from the theories of Individual Student Departure, Student Integration (Tinto, 1987), and the Student Engagement (Kuh, 2003, 2009). The Theory of Student Integration provides a foundation for the Theory of Student Engagement. In it, Tinto (1987) argues that in order for students to commit to an institution and persist, they must have achieved a level of academic and/or social integration within the institution. Without it, students are more apt to leave the institution without achieving a degree. Tinto's theory presupposes that students have both engaged and become involved at their institutions with the result being integration. His theory was also the first to examine the interaction between the student and institution. He noted that the institutional/student interaction either supported or hindered integration.

Based on VanGennep's (1960) theory of the rites of passage, individuals move through three phases of integration resulting in the adoption of the norms and ideas of practices of the group. The idea that individuals must adopt the norms and beliefs of the dominant group lead to much criticism from researchers and scholars who felt that the term "integration" implied that students from minority backgrounds were required to relinquish their cultural identities in order to assimilate to the culture of the institution. A culture which is determined by the dominant culture. Based on this feedback, Tinto revised his theory (1993) to better define the term and brought a greater emphasis to the ways students engaged with their institutions in social and academic ways. The dialogue

was extended to include a discussion of institutional fit and whether students were well matched with their chosen institutions.

Despite the critiques, research has confirmed that the Theory of Student Integration is a relevant theory for college persistence (Cabrera, Castaneda, Nora, & Hengstler, 1992; Chapman, Pascarella, 1983; Christie and Dinhams, 1991; McQueen, 2009; Pascarella and Terenzini, 1988; Tinto, 1975). Students with higher rates of academic integration have higher persistence rates than students who were identified as not being academically integrated. Academic integration is measured by several metrics including GPA, interaction with faculty regarding academic topics, interaction with faculty outside of the classroom regarding non-academic topics, and study habits. Social integration is measured by variables such as sense of belonging, connections with other students, participation in academic activities outside of the classroom, participation in student organizations or activities, and living on campus. However, on its own, it does not adequately explain minority student attrition nor completely support minority student success. For minority students, the concepts related to separation from previous culture and beliefs seemed to hinder student persistence. Other theories were developed to better understand the unique experience of minority students in general.

The Theory of Student Engagement (Kuh, 2003, 2009) underscores the importance of integration into college, a critical component to retention as identified by Tinto (1987), while responding to critiques of the theory. Kuh shifts towards the idea of engagement as opposed to integration. The concept of engagement focuses on the time and effort students invest in activities that are empirically linked to academic outcomes

and what institutions do to encourage students to invest in these activities (Kuh, 2009). Dimensions of engagement include activities such as studying, engaging with peers and faculty, applying knowledge gained through academic work to real-world challenges, and prompt feedback. This shift is particularly important when examining the retention and completion trends of minority students for whom the term "integration" implies that students must assimilate to the culture of the institution abandoning their own culture. The theory of engagement illustrates a menu of options students might employ to connect with the institution academically and socially. It also shifts the burden of success from resting completely on the student to being shared with the institution.

Although the shift from integration to engagement was in response to the criticism that the Theory of Student Integration was not applicable to minority students, Bensimon (2007), and Harper & Quaye (2008) caution that the concepts of engagement may apply less to minority groups than to traditional age and white students. Pascarella and Terenzini (2005) found that generally, all students benefit from engaging in academically meaningful activities but that some groups benefit more than others from certain activities. One contributing factor to the difference in the level of benefit from engagement is the level of sense of belonging felt by students. For this reason the Theory of Sense of Belonging (Hoffman, Richmond, Morrow, and Salomone, 2003; Scholssberg, Lynch, Chickering, 1989; Tucker, 1999) is also used to provide context for the extent to which benefits from engagement are present. Belonging is described as a sense of membership based on the student's perceptions of their involvement and support from those around them (Hoffman, Richmond, Morrow, and Salomone, 2003). Based on these

theoretical frameworks, it would seem then that different constructs of engagement may contribute uniquely to baccalaureate degree completion for Latino students.

Each theory, provides a framework for the study design and will guide the selection of variables and research questions under examination. With the theoretical underpinnings of Tinto and Kuh, this dissertation is guided by the Anti-deficit Model of Student Achievement (Harper, 2010) The Anti-deficit Model was utilized in the Black Male Student Success Study (Harper, 2012) as a research orientation which examines the experiences, variables, and characteristics of African-American male students who exemplify the description of a model student and successfully completed a four-year. His aim was to identify the experiences, characteristics, variables, and strategies utilized by students to achieve their success. Based on this information, practitioners could develop intervention and engagement strategies to increase the likelihood of completion for this demographic. Harper (2010) went on to utilize this framework to examine minority success in STEM majors.

Using the anti-deficit model as a conceptual framework, the literature review and research questions will be framed to examine the contributors to degree completion versus the barriers to degree completion. Approaching this study with an anti-deficit framework will be a unique contribution to the literature on the success of Latino students in post-secondary education.

Research Questions

The purpose of this study is to examine the extent to which variables related to socio-economic status, academic preparation, and engagement are related to completing a

baccalaureate degree at a four-year public university, explicitly for Latino students, and if so, which variables or combination of variables are more highly correlated with completion. The overarching research question for this study is whether (and to what extent) there is a relationship between hypothesized constructs of engagement, socio-economic status, and academic preparation on Latino baccalaureate completion. The study will be guided by the following research sub-questions.

1. Is the 2013 UNC Sophomore Survey measuring constructs of engagement?
2. Is there a relationship between constructs of engagement, academic preparation, and socio-economic status?
3. Are these relationships different for different racial categories?

Summary of Methodology

This study uses a critical quantitative research paradigm which influences its structure. The critical quantitative paradigm lends itself to this study due to the aim of the research questions to identify the quantitative contribution of constructs of engagement to Latino baccalaureate degree completion and whether there are conflicts with current theoretical assertions.

The tool used to measure engagement, the 2013 UNC Sophomore Survey, is different from the normalized tools typically used to measure student engagement (National Survey of Student Engagement, Student Experiences in the Research University survey, the Cooperative Institutional Research Program Freshman Survey, etc.). The UNC survey was selected for use due to the participation of all 16 constituent universities in the UNC system and the construction of the survey which lends itself to

measures of engagement similar to what are found in other validated surveys such as the National Survey of Student Engagement. The ability to examine data related to students from across the UNC system provides a broad view of Latino completion and engagement across North Carolina but also within the context of North Carolina. Examining the constructs of engagement in a survey tool outside of those typically examined in the literature provides an opportunity to explore the nuance of engagement specifically for Latino students. Constructs will be examined to determine whether there are differences between the engagement constructs present in Latino responses as compared to those of other racial/ethnic groups and to interpret those differences in a culturally relevant way for Latinos. By doing so, recommendations for practice and model modifications can be made that will be specific to this population but may also be applicable to other minority or under-represented groups.

Responses of students who self-identified as Latino on the 2013 UNC Sophomore Survey serve as the primary source of data. This survey is a tool used by the University of North Carolina to gauge the satisfaction of its sophomore students enrolled in the 16 constituent institutions. The survey consists of 119 items most of which are set on a Likert scale. Several other items requesting demographic information will also be removed as that data will be provided through the UNC Student DataMart data warehouse. Once these items are removed, there will be a total of 110 items with Likert scales containing between 5 and 6 categories on each item. In order to be invited to participate in the survey, students must have completed between 30 and 60 semester hours. This cohort of responses was chosen due to the fact that these students would be

entering their fourth year of study this year and potentially graduating, or within 45 semester credit hours of graduating which provides a sample of Latino students who have been successful in attaining a baccalaureate degree. This will not capture students who have departed the university prior to achieving these thresholds. Although empirical examination of this population is important, this study seeks to identify the characteristics and variables related to achievement and therefore it is acceptable that these individuals are not included for analysis.

The intention of this study is to examine the extent to which variables related to socio-economic status, academic preparation, and engagement are related to completing a baccalaureate degree at a four-year public university, explicitly for Latino students. If the variables are related, which variables or combination of variables are more highly correlated with completion. To accomplish this, two major analyses will be used during the study, (a) exploratory factor analysis and (b) logistic regression.

Exploratory factor analysis (EFA) will be utilized to address the first research question, *is the 2013 UNC Sophomore Survey measuring constructs of engagement?* EFA was selected as the statistical method for this portion of the analysis due to the fact that its purpose is to identify latent constructs underlying the variables in a dataset. EFA is also used to generate hypothesis regarding the possible structures of these latent constructs. Because this survey has never been examined for the constructs underlying each of the survey items, EFA is the best analytical choice. Once constructs have been identified, internal validity will be tested utilizing the Cronbach Alpha scores and factor scores will be created for each construct identified during EFA. These factor scores will

be utilized during the next phase of analysis which will address the four research questions previously noted.

Logistic regression will be used to address the remaining research questions. The independent variables of interest include, socio-economic status (identified by eligibility for Pell or not), academic preparation (identified by High School GPA), and hypothesized measures of engagement. The binary dependent variable is whether the individual has completed a baccalaureate degree or is still enrolled by May 2016 or is not enrolled or has not graduated by May 2016. Goodness-of-fit tests will be conducted and the results examined to determine whether the logistic model with the set of predictors (academic preparation, socio-economic status, and constructs of engagement) does better at predicting whether a student will complete a baccalaureate degree than the null model (the model with no predictors) and the reduced model (the model with only academic preparation and socio-economic status). The results of the logistic regression analyses will also be examined to determine the importance of each of the engagement constructs in each of the models, or the extent to which (if at all) each engagement construct, contributes to completing a baccalaureate degree. The differences in model fit and odds ratios of the engagement construct variables will also be examined and compared to determine which type of engagement and which combination with academic preparation and socio-economic status do a better job of accurately predicting baccalaureate degree completion or persistence.

Delimitations and Limitations

A limitation of this study is that the effect of institutional type is not accounted for in the research design due to the fact that the resulting sample for each institutional type would be too small. Therefore, the combination of institutional type and the independent variables and baccalaureate degree completion cannot be identified. In addition, the use of a survey instrument where constructs have been identified through EFA, and the imputation of missing data, will generate results that cannot be generalized to other Latino populations. Additionally, the use of this population excludes students who may have transferred from another institution with credit hours just outside the range of those captured here resulting in a group of students with characteristics that may have provided additional context for answering the research questions. It also excludes students who have stopped out before attaining 30 credit hours. Likewise, students who responded may be students who are already more likely to be engaged which could present bias. Finally, this research study does not account for the variation among Latino cultures and histories. This limitation is present because students are not disaggregated by country of origin or immigration status (whether they are first-generation immigrants, foreign-born, or longer-term US residents and citizens). It should be noted that there exists a vast difference in culture and history among Latinos and the generic term and categorization ignores this diversity.

Assumptions of the Study

This study hypothesizes that constructs of engagement are present in the 2013 UNC Sophomore Survey. This assumption is based on the construction of the survey items which are categorized into six major categories: Academic Environment and

Advising, Help Outside the Classroom, Other Offices that Serve You, Campus Safety, On-and-Off Campus Activities; and Conclusions. Within each major category there are items constructed similarly to other major surveys of student engagement including the NSSE. Second, since students are self-identifying as Latino, this study assumes that students are accurately representing their racial background and that this sample represents all Latino students who responded to the survey.

Definition of Key Terms

A number of terms are used throughout this study as they relate to the constructs, theories, and variables of interest. Definitions of these key terms are provided below.

Academic Engagement is a construct of engagement defined as the amount of time and effort a student devotes to activities that are specifically linked to the academic environment.

Completion is defined as the attainment of a 4-year post-secondary degree within 6-years of initial enrollment.

Degree Attainment is defined as the percentage of the population that has attained a post-secondary degree.

Engagement is defined as the amount of time and effort a student devotes to academically relevant activities.

First-Generation College Student is defined as a student whose parents have not completed a four-year, post-secondary credential.

Integration is defined as having a level of academic or peer engagement with campus

Involvement is defined as the amount of physical and psychological energy devoted to the academic experience

Latino is defined as a student who identifies as being from a Hispanic or Latino origin.

Statement of Significance of the Study

Many researchers have examined completion rates among different demographic groups and have identified Latinos as having one of the lowest completion rates of all racial/ethnic groups (DesJardins, Ahlburg, & McCall, 2002; Reason, Terenzini, & Domingo, 2006; Terenzini, Pascarella, 1978). There are numerous theories of student retention and departure (Astin, 1984; Bean, 1982; Braxton, Vesper, & Hossler, 1995; Cabrera, Nora, & Castaneda, 1993; Tinto, 1987) some of which even focus on minorities. However, few focus on Latino students exclusively (Cabrera, & LaNasa, 2001; Crisp, & Nora, 2009; Hurtado, & Carter, 1997; Ong, Phinney, & Dennis, 2006). Variables posing challenges to completion and theories surrounding non-completion have been proposed and identified for broad groups of students. However, those hypotheses and discoveries have generally been made for other minority populations and applied to Latino students. Researchers are just beginning to focus on the specific challenges of Latinos. This growing body of literature has identified the pivotal role that family obligations and social support play in the persistence of Latino students (Hurtado, & Carter, 1997; Villenas, & Deyhle, 1999). These finding suggest that there could be linkages between student success and engagement and that the interaction of different types of engagement may contribute to completion. It also suggests that the term "engagement" may have a different meaning and include different types of activities when applied to Latinos.

Normalized definitions and applications of engagement may not hold for this specific population.

As previously stated, there is a growing body of literature surrounding Latino student success. Almost all of that literature has focused on the variables related to non-completion. There have been few studies which have focused on the experiences, characteristics, and variables of Latino students who DO complete an undergraduate post-secondary degree within 4 or 6 years. Harper's (2012) study which examined the experiences of completers focused on African-American males. In terms of Latino degree attainment, there have been a small number of studies undertaken to understand the experiences of Latino students who complete a graduate degree. The present study continues the development of the body of literature examining students who do complete and begins the examination of successful Latino students at the undergraduate level. This dissertation will contribute to this growing body of literature in a number of ways.

First, this study will contribute to the research seeking to develop a relevant theory of Latino persistence that is culturally informed and applicable to the needs and unique characteristics of this population. Secondly, through the utilization of a critical quantitative approach, this dissertation will illustrate the importance and relevance of the critical quantitative paradigm for investigating empirically, questions that are related to social issues. Finally, this dissertation is significant to North Carolina (and potentially other states) due to the growing population of Latinos. Unlike "legacy states" like Texas, New Mexico, Arizona, Nevada, and California who have a history, and one could argue origin, in the Hispanic and Latino cultures, North Carolina has not had a legacy of

cultural hybridity. The Latino population in North Carolina is largely immigrant meaning that future students are not only first-generation college students but first-generation Americans. There will be greater challenges associated with language and culture faced by future North Carolinians than exists in states where there has been a Hispanic or Latino presence for hundreds or even thousands of years. The results of this study will provide higher education practitioners and policy makers with information that they can use to further examine these constructs for larger populations of Latino students.

Summary

Much has been written about the challenges and barriers specific groups of students encounter along the way to college completion. These have been identified for students in specific socioeconomic, racial, and ethnic groups. Much of the research that has been conducted on minority student completion has focused on minority students who do not complete. Few researchers have attempted to understand the experiences of students who do complete a four-year post-secondary degree.

With the population growth of Latinos and the shifting enrollment demographics in higher education, more attention is being paid to completion rates among this demographic of students. Select research has been conducted in this area and even less on successful Latino students. In order to increase completion rates, expand access to higher education, and develop successful intervention programs and policies to improve completion for Latino students, more information on the variables contributing to success is imperative.

Through the utilization of the Theory of Student Integration, the Theory of Engagement, and the concept of Sense of Belonging, this study will seek to examine the extent to which variables related to socio-economic status, academic preparation, and engagement are related to completing a baccalaureate degree at a four-year public university, explicitly for Latino students. If a relationship exists, this study will examine which variables or combination of variables are more highly correlated with completion. The anti-deficit model will provide a unique lens through which the research questions will be developed and the study is oriented.

Based on research of student retention in general and for minority students specifically, the variables selected in this study are related to those variables identified as being necessary for the successful completion of a four-year post-secondary degree.

Chapter two will provide a review of the literature on the completion gap, the Theory of Individual Student Departure (Tinto, 1987), the Theory of Student Involvement (Astin, 1984), the Theory of Student Engagement (Kuh, 2003, 2009), the concept of Sense of Belonging (Hurtado, Carter, & Spuler, 1996; Hoffman, Richmond, Morrow, and Salomone, 2003; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Scholssberg, Lynch, & Chickering, 1989; Tucker, 1999), and, the anti-deficit model (Harper, 2012).

Chapter II: Review of the Literature

The purpose of this study is to examine the extent to which socio-economic status, academic preparation, and constructs of engagement contribute to the likelihood that a Latino student will complete a bachelor's degree. The body of literature which shapes this study illustrates the connection between engagement and academic outcomes and specifically questions the application of theories which were designed to understand persistence behaviors of predominantly white, middle-class students, to the persistence behaviors and experiences of Latino students. The theoretical perspectives guiding this study include Tinto's (1993) theory of student integration, Kuh's (2003) theory of student engagement, and the concept of sense of belonging. Utilizing a critical quantitative lens, these theories will be discussed and examined in order to extend the knowledge of predictors of student engagement in order to create more culturally sustaining theories and models of Latino student persistence.

Chapter two begins with a discussion of the literature review methods followed by a description of the state of Latino post-secondary attainment. An overview and critique of the theories developed to understand student persistence behaviors will follow this description. These theories will be discussed in the order in which they evolved beginning with Tinto's (1975, 1993) theory of student integration and moving through the evolutions of that theory including Kuh's (2003) theory of student engagement and the concept of sense of belonging and a discussion of the anti-deficit model and how it informs and shapes this study. These theories will be presented as they specifically relate to Latino retention and degree completion and will include discussion of the ways in

which they fail to fully explain behaviors of persistence for Latinos. Measures and operational definitions of engagement will be presented to illustrate the lacking recognition that dominant definitions and measures of engagement neglect to account for the intercultural effort required for minority students to engage in traditional ways and that differing values may influence the operationalization of engagement in unique ways for Latino students. The chapter will conclude with implications for the forthcoming study and a summary of why Kuh's (2003) theory of student engagement provides a convincing framework for examining the extent to which constructs of engagement contribute to Latino college completion.

Literature Review Methods

There is a vast amount of scholarship investigating the retention and persistence behaviors of first-generation college, low-income, and minority students but the amount of scholarship decreases when examining specific groups of minority students and decreases even further when that scholarship critiques the dominant theories guiding our understanding of these behaviors. A growing body of research on minority student persistence has emerged that challenges the applications of theories developed to explain behaviors associated with the dominant population of college-goers. This critical examination of theories and constructs has highlighted the need to develop culturally relevant models of persistence for minority students. Specifically, minority students are often categorized together instead of examining the unique differences by minority group. To examine the literature for this review, first broad scholarship on student persistence was examined followed by a narrowed review of scholarship on first-generation and low-

income students, followed by a review of scholarship of minority student persistence and finally a review of scholarship on Latino student persistence. In addition, scholarship employing a critical quantitative approach was included as was scholarship exploring engagement in Latino college students.

The before mentioned categories of literature were identified due to the natural progression of the scholarship around the theme of student retention and persistence. Online databases such as JSTOR, ERIC, and online journals covering higher-education, sociology, and psychology were examined utilizing key words such as, higher education student persistence, Latino student success, Hispanic student success, Latino college completion, minority student sense of belonging, theory of student integration, theory of student involvement, and the theory of student engagement. Articles discussing the role of critical quantitative research in higher education and research on the National Survey of Student Engagement were also included. Books covering topics of student retention, persistence, and minority student success were also reviewed. Literature reviews examining Latino retention and persistence as well as student retention and persistence in general were utilized to identify scholarship which could potentially inform this study. Except for seminal works or those with high relevance to the topic of this study, literature was restricted to the years 2000 and 2014 to capture the most recent evolution of thought in the area of Latino student persistence and critical quantitative approaches.

Scholarship identified through these search methods were examined to identify studies and scholarship utilizing the theories of student integration and student engagement as well as the concept of sense of belonging and then further narrowed to

examine the scholarship in these areas specifically relating to Latino student persistence and completion. Scholarship which supported and questioned the underlying assumptions of this study were intentionally included in this literature review.

Description and Critique of the Scholarly Literature

Theories guiding the development of this research study include Tinto's theory of student Departure and Integration and Kuh's theory of Student Engagement. The concept of sense of belonging also informs this study. The three together create a framework by which decisions regarding the inclusion of variables for model testing, measures for gauging those variables and how results are interpreted. They also inform recommendations for adjustment to theories explaining persistence for Latino students. Before discussing these theories and framework and their applicability to Latino student persistence, it is important to explain the scale of the persistence issue.

The State of Latino Student Completion. Latino students are entering college at higher rates than they have in the recent past (Aud, Fox, & KewelRamani, 2010; Krogstad, & Fry, 2014; Pryor, Hurtado, Saenz, Santos, & Korn, 2007; Snyder, & Dillow, 2009). In fact, between 1996 and 2012, Latino college enrollment increased by 240%, which was the largest percentage gain of any racial or ethnic group (Krogstad, and Fry, 2014). Despite this increase in enrollment, there has not been a subsequent increase in the percentage of Latino students who complete a bachelor's degree. The National Center for Education Statistics reports that of the students in the 2006 cohort, only 29% of the first-time, full-time Latino students complete a four-year degree in four years. This compares to 43% of Whites and 46% of Asians. Although there are challenges with the

way the metric is applied including the exclusion of students who either, transfer into or out of an institution and complete a four-year degree or students who may stop out and return at a later date to complete a degree; it is indicative of a completion gap. One would typically find a study of this type examining a six-year versus a four-year graduation rate. Due to the parameters of the data set for this study, the outcome variable under examination is a four-year graduation rate. Therefore, the statistics related to that outcome are included for reference as noted above.

Latinos represent 17% of the nation's 18-24 year old college student population, but only 9% of degrees are currently earned by Latinos (Fry, and Lopez, 2012). It is important to note that Latinos are disproportionately more likely to enroll in a two-year community college (Alfonso, 2006; Campa, 2010; Crisp, Nora, 2009; Crisp, Taggart, Nora, 2014; Nora, Crisp, Smart, 2009) than other racial or ethnic groups. This enrollment pattern creates a barrier to completing a four-year degree. Research conducted by Hoachlander, Sikora, Horn, and Carroli (2003) has shown that students who aspire to complete a bachelor's degree but enroll in a community college initially have lower probabilities of completing a bachelor's degree.

In general, a large proportion of Latino students are first-generation college students (Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007; Terenzini, Springer, Yeaeger, Pascarella, and Nora, 1996) who are more likely to leave college before completing a degree (Choy, 2011) when controlling for other factors such as delaying enrollment and working full-time, as well as financial aid, gender, and race/ethnicity. Fisher (2007) found that being a first-generation college student predicted lower college GPAs for

Latino students. Arellano & Padillo (1996) found that the highest level of education obtained by students' parents was positively related to Latino students' grades. Pascarella, Pierson, Wolniak, and Terenzini (2004) described first-generation students as handicapped in accessing and understanding information and attitudes relevant to making beneficial decisions about the importance of completing a college degree, college choice, and the best academic and social choices to make while in attendance.

Additionally, Latino students are more likely to come from low-income families (Merisotis, & McCarthy, 2005; Nunez, & Bowers, 2011) which means they are also more likely to come from under-resourced schools (Contreras, 2005; Crisp, Nora, Taggart, 2009; Garcia, & Bayer, 2005; Goldrick-Rab, 2006; Goldrick-Rab, Carter, Winkley Wagner, 2007; Merisotis, & McCarthy, 2005). This lack of academic preparation leads to lower levels of academic self-efficacy and an increase in the number of perceived barriers to attending college, and lower positive outcome expectations as related to college-going (Borders-Edgar, Arrendondo, Robinson-Kurpius, & Rund, 2011; Cole, 2008, Gibbons and Borders, 2010; Massey, Charles, Lundy, & Fischer, 2003; Rodriguez, 1996; Stage, 1999; Torres, & Solberg, 2000). Academic preparation, meaning the quality of high school coursework and student performance in those courses, has been found to potentially be the most important predictor of student success in college (Adelman, 1999; Cole, 2008; Dennis, Phinney, & Chuateco, 2005; Fisher, 2007; Goldrick-Rab et. al, 2007; Nora, 1987). GPA and academic performance while in high school were identified as an important indicators of college grades and completion for Latino students (Cerna, Perez, and Saenz , 2009).

Two year college enrollment and other non-completion characteristics such as lack of academic self-confidence, lack of engagement with critical support persons, and/or in academically supportive activities can in large part be attributed to being from a low-income family and weaker academic performance in high school (Alfonso, 2006; Arana, Castañeda-Sound, Blanchard, & Aguilar, 2011; Arellano, & Padilla, 1996; Barajas, & Pierce, 2001; Bordes, Sand, Arredondo, Robinson-Kurpius, & Rayle, 2006; Borders-Edgar, et. al, 2011; Cabrera & Padilla, 2004; Campa, 2010; Cejda, Casparis, & Rhodes, 2002; Crisp & Nora, 2009; Crisp & Nora, 2010; Crisp, Taggart, & Nora, 2014; Fisher, 2007; Gloria, Castellanos, Lopez, & Rosales, 2005; Hernandez, 2000; Nora, Crisp, Smart, 2009; Otero, et. al. 2007; Rodriguez, 1996; Stage, 1999; Torres & Solberg, 2000; Zalaquett & Lopez, 2006). Weak academic performance in and of itself does not mean that students will not complete a baccalaureate or post-secondary credential, but it is a barrier that students must overcome in order to be successful in college.

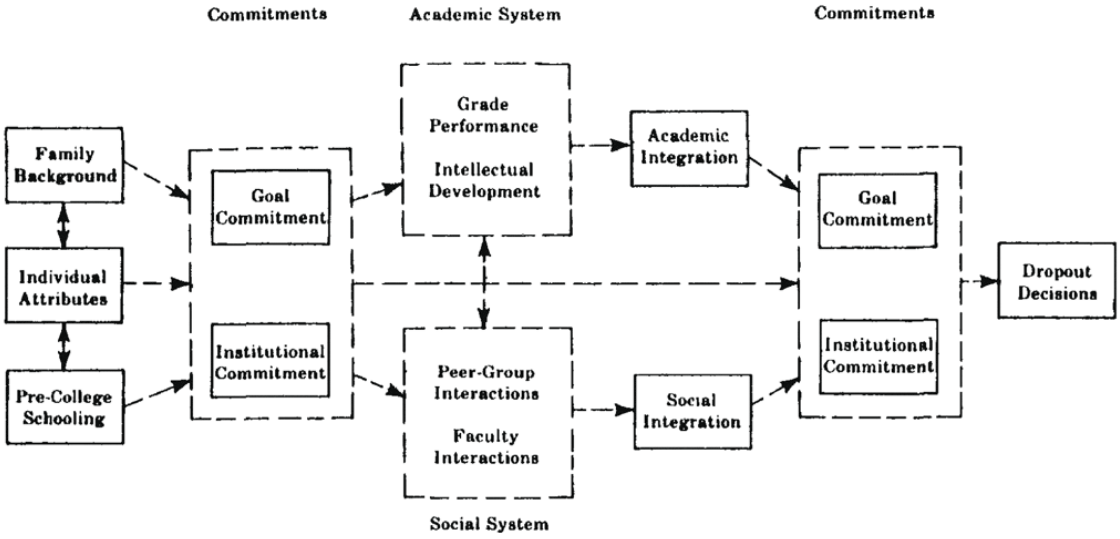
Although it is important to understand the factors contributing to non-completion, the present study is interested in understanding what factors contribute *to completion* of a four-year degree. Therefore, this review will turn to a discussion of the theories and frameworks which have been created to better understand persistence behaviors and whether these should or should not be applied to Latino students.

Theories to Understand Student Persistence

Tinto's Theory of Student Departure. Tinto's (1975, 1993) theory of student departure was conceptualized utilizing the frameworks in Durkheim's (1951) theory of individual suicide and Van Gennep's (1960) theory of rites of passage to understand why

students decided to leave college and how those who left compared to those who stayed. The theory of rites of passage have several stages. The first is separation from communities of the past. When applied to college students, this stage includes separation from high school friends, home community, and even creating space between the students and their family. The second stage in the rites of passage is the transition to the new community. In terms of college students, this phase takes place as students are transitioning to college during their first year. The third phase in the rites of passage is integration into the new community. As applied to college students, Tinto described integration as being both academic and social. This idea was borrowed from Durkheim's theory of egotistical suicide where he describes social and intellectual integration. Social integration refers to day-to-day interactions with members of society whereas intellectual integration refers to the sharing of values that are commonly held by society. When individuals fail to interact socially or have values that deviate from other members of society, isolation occurs. If individuals are able to identify with a subculture of individuals who share their values, then membership becomes possible. When applying this idea to student departure, Tinto developed a model of individual student departure that accounted for personal attributes, goal commitments, institutional experiences, and integration. In this way, the college environment is seen as an interactive system where student experiences are integral in their ability to navigate the culture of college. Figure 1 below illustrates Tinto's model.

Figure 1 Tinto's longitudinal model of institutional departure



Source: Figure 4.1. A longitudinal model of institutional departure. Tinto (1993, p. 114).

The Theory of Student Departure (1973, 1993) has three tenets, integration, commitment, and rites of passage. First, students must be integrated into the campus community either socially or academically or both. Second, students must have a commitment to the institution or the goal of completion. Third, students undergo a rites of passage whereby they separate themselves from their former communities, transition into their new environment and role, and finally, become incorporated as a part of their new community. When applying this model to minority students, the concept of integration and separating from home communities is particularly problematic. The theory does not account for the importance of familial and community ties often valued in minority cultures, and for the sake of this research, the Latino culture (Marin & Marin,

1991; Phinney, 1996; Staples & Mirande, 1980). In fact, a substantial amount of research has found that maintaining connections to family and significant others from home communities can be a significant source of support for minority students (Cabrera, Nora, Terenzini, Pasceralla, & Hagedorn, 1999; Delgado, 2002; Gloria, Robinson,Kurpius, Smith, Caplow & Donaldson, 1996; Hurtado, Carter, & Spuler, 1996; Museus, 2008, Museus, Maramba, Palmer, Reyes, & Bresonis, 2011; Museus & Quaye, 2009; Nora & Cabrera, 1996: Rosas & Hamrick, 2002). The second problem created when applying this model to minority students is the assumption that assimilation and acculturation are required to improve persistence. Students from collectivist oriented cultures, like those of Latin America, often maintain collectivist values in college (Gaines, Marelich, Bledoe, Steers, Henderson, & Granrose, 1997; Tiridas, 1989). Dennis et. al. (2005) found that students who were able to combine their collectivist norms with individualist norms valued at predominately White institutions were more likely to succeed in college. The third problem is the failure to recognize the reality that full integration results in the loss of the home culture. The loss of cultural heritage is a traumatic experience which could lead to a greater probability that the student will leave the institution (Renn, and Reason, 2013).

Many scholars have critiqued Tinto's theory and their critiques are based on two primary assumptions: 1) higher education serves as a "rite of passage" (Tierney, 1999, p. 82) and 2) that students must sever ties from their former communities in order to integrate into their new environment (Renn & Reason, 2013). Higher education as a "rite of passage" emerges from Van Gennep's (1961) theory of Rites of Passage. The theory

was developed to explain the passing from childhood into adulthood within a cultural context. Rites of passage are often created and facilitated in such a way as to ensure success of the individual (Tierney, 1999). In a scenario where an individual's "rite of passage" involves moving between cultures a tension emerges between the supportive facilitation experienced with a child moves into adulthood and the reality of cultural loss for minority students transitioning to college.

Transitions between two cultures are often traumatic experiences. Recognizing that minority students who are transitioning to college are also transitioning to a new cultural environment exposes a flaw in Tinto's theory. Namely that the application of Tinto's theory to minority students who are often adjusting environmentally, socially, & culturally, fails to recognize the complexity of such transitions and the important roles that institutions must play. Tinto's theory takes a person-centered approach (Rendon, Jalomo, & Nora, 2000) to understanding student departure. Critics have argued for a situation-centered approach (Castillo, Conoley, Choi-Pearson, Archuleta, Phoummarath, &Van Landingham, 2006; Rendon, Jalomo, & Nora, 2000). A person-centered approach emphasizes the responsibility of the student to adapt to the cultural norms and values of the institution, faculty, and peers and "abide by the formal and informal structural requirements of the community" (Castillo et. al., 2006). The application of a person-centered approach may be particularly problematic for Latino students who may experience conflict between university social and cultural norms and their own and therefore face systemic barriers to connecting with the university environment (Castillo, 2005; Castillo, Conoley, and Brossart, D.F., 2004). The inclusion of a situation-centered

approach provides a holistic methodology to understanding Latino student persistence whereby the context or environment is examined to determine what changes might be made in the university to better facilitate student connection (Castillo et al, 2006). For example, requiring that all students in introductory math courses participate in a math lab or supplemental instruction ensures that all students are exposed to academic support services as a component of the course and removes the stigma attached to asking for help which may carry forward to other course. The person-centered approach would simply communicate to students the availability of such services. Shifting the approach from a person-centered to situation-centered increases the responsibility of the institution to create environments that are conducive to assisting students with making connections with the institution and institutional members and agents (students, faculty, and other staff) while acknowledging that students must put forth effort in areas that promote their academic well-being.

Although a person-centered approach was an important evolution of persistence models, it is imperative to recognize that Tinto's (1993) theory is developed from an individualistic perspective. For minority students who come from cultures which value the collective over individual, students may feel conflicted or devalued in this environment which could affect success. When considering Latino cultures, membership in a community is an essential source of strength, cultural capital, and knowledge. This strength in community contributes to student success and even serves as a reminder of why they are pursuing a baccalaureate degree (Hurtado & Carter, 1997; Laden, 2001; Gloria & Castellanos, 2012; Fisher, 2007; Chiang, Hunter, & Yuh, 2004;

Cabrera et. al., 1999; Delgado Burnal, 2001; Gloria et. al., 1999; Gonzales, 2000; Guiffrida, 2004, 2005; Hendricks et. al., 1996; Hurtado, Carter, & Spuler, 1996; Nora & Cabrera, 1996; Rosas & Hambrick, 2002). In support of this evolution, and in conflict with the idea of separation in Tinto's theory, numerous researchers have found support for the importance of Latino students maintaining their connection to culture, family, and peer support networks (Cabrera, Nora, Terenzini, Pascarella, Hagedorn, 1999; Delgado Bernal, 2002; Eimers & Pike, 1996; Gloria, Catellanos, Lopez, & Roales, 2005; Gonzalez, 2000; Guiffrida, 2003, 2005; Hendricks, Smith, Caplow, & Donaldson, 1996; Hurtado, Carter, & Spuler, 1996; Murguia, Padilla, & Pavel, 1991; Nora, 2001; Nora, & Cabrera, 1996; Padilla, Trevino, Gonzalez, & Trevino, 1997; Rosas & Hambrick, 2002). Eimers and Pike (1996) studied minority students generally and found that encouragement from family and friends had an important influence on student's intentions to persist. Gloria et al (2005) found that for Latino students specifically, the maintenance of familial relationships and support contributed to an increased sense of cultural congruity, positive self-perception of the university environment, and decreased perceptions of barriers.

Community also extends to the campus environment where connections with faculty, staff, and administrators have been found to instill academic and interpersonal validation for minority students empowering them to believe in their ability to be successful learners (Rendon, 1994, 1996). Rendon amplifies the importance of community and recommends that instead of solely offering programs to enhance student skills institutions should provide more programming that includes components designed

to improve minority student social well-being, promote positive interactions with nonminority faculty, as well as minority and nonminority students. Her idea of cultural integrity highlights the importance of valuing minority student cultures and backgrounds. Through valuing, minority students are able to be more confident in their culture and identity allowing them to retain their identity while still establishing membership within the college community and succeeding.

When the theory of student departure (Tinto, 1975; 1993) was developed, the population of college students was much more homogeneous and much more aligned with the values and culture of the college environment. Today's diversity means that students are entering college with different values and cultural experiences than those espoused by the college environment, particularly at predominantly White institutions. Due to this incongruence, students are not transitioning within a singular cultural context but moving from one culture to another. The fact that students are making a transition to college but also reconciling cultural environments means that Van Gennep's theory is applied out of context and does not accurately reflect the persistence behaviors of minority students.

The second assumption of the Theory of Student Integration is students must sever ties from their former communities and fully integrate into their new college environment (Renn & Reason, 2013). Tierney (1992, 1999) identifies the theory's suggestion that students must assimilate to the cultural mainstream and abandon their ethnic identities to succeed in college as an oversight of the history of ethnic oppression and discrimination. Abandonment of ethnic identity has been linked to feelings of

alienation and intimidation within the college environment, leading students to doubt their abilities to succeed (Rendon, 1994). The success of this transition according to Tinto is that the student must socially disassociate with their past and communities. These critiques highlight the lack of recognition that completion is positively impacted by sustaining the connections to home cultures and significant individuals. Instead of dissociation, Tierney (1993) asserts that students require cultural capital and integrity in order to be successful in college.

The idea of cultural capital lead to the proposal of an alternate model of student success based on cultural integrity and Bourdieu's (1977) concepts of cultural capital and habitus (Tierney, 1999). Cultural capital is defined as a set of linguistic and cultural competencies individuals inherit or learn. Bourdieu's theory also contains a construct called habitus. Habitus is defined as the set of perceptions individuals have of their environment (Bourdieu, 1977). These perceptions are generated by socialization processes which enable individuals to accumulate (or not) financial, informational, social, and other resources which enable them to work toward attaining their aspirations. Tierney's (1993) theory places cultural capital as a central predictor of student persistence. Students who possess cultural capital, or find ways to develop capital, are more likely to persist.

Evolution of Tinto's Theory, Toward Kuh's Theory of Engagement. George Kuh's (2003, 2009) theory of engagement combines the person-centered and situation-centered approaches to explain an interaction between students and their college environments. His concept of engagement (Kuh, 2003, 2009), refers to the amount of

time and effort students devote to activities that are empirically linked to outcomes of college and what colleges do to encourage students to participate in them. Although similar to Astin's theory of student involvement (1984), engagement is different from the concept of involvement. Kuh focused specifically on the amount of time and effort students put into activities that are linked to desired college outcomes whereas Astin highlights involvement at the institution. The more involved a student is the more successful they will be in college. Success in his theory is defined as persistence. Students will continue their education if they are involved at the institution. "Although these writers use different terminology to describe their concepts of engagement, their views were all based on the premise that learning in college is related to how students spend their time and energy." (Pike, Kuh, McCormick, 2011 p. 301) As one evaluates Kuh's theory (2001) it is clear that the activities that lead to "desired college outcomes" are academic in nature. These academic activities include learning communities, joint research projects with faculty members, service learning, study abroad, and internships. Astin's theory (1984) frames meaningful activities as involvement in student organizations, honor societies, student activities, and athletics which allow them to make connections with other students, faculty, and staff. Through these bonds, students connect to the institution and develop a sense of belonging preventing them from leaving. For Kuh, involvement was only the first step to engagement and engagement leads to learning outcomes. Astin's theory (1984) does not specify that the activity leads to student learning, but that involvement prevents attrition. Kuh's theory (2001) however,

is more concerned with the time the student spends in academically purposeful activities leading to engagement.

In a study by Carini, Kuh, and Klein (2006), certain areas of engagement were positively correlated with GPA or academic performance. These were level of academic challenge, active and collaborative learning, student-faculty interaction, supportive campus climate, reading and writing, quality of relationships, institutional emphasis on good practices, student-faculty interaction concerning coursework, and integration of diversity into coursework. Significant positive correlations with general education and personal-social gains were also noted between self-reported outcomes and GPA gains. The activities that were correlated with the largest gains for first-year students included the number of five or fewer page papers students were required to write, coming to class having completed the readings and assignments, quality relationships with faculty, quality of the relationships with administrative personnel and offices, and working harder than expected in order to meet the instructor's expectations (Carini, Kuh, & Klein, 2006). The correlations for seniors had several differences. Particularly, seniors benefited more from peer contact such as working in groups on assignments and attendance at campus events. They also benefited more from assignments that required the synthesis of information from different courses and applying that information to problems. High quality advising was also of greater benefit to seniors as was attending institutions that placed value and emphasis on student interaction with others from different backgrounds (Carini, Kuh, and Klein, 2006).

Kuh focuses specifically on the amount of time a student is engaged in activities that promote learning. Time is linked to higher levels of engagement and higher levels of engagement to higher levels of academic outcomes including persistence and acknowledges the fact that minority students have the ability to succeed at college while being part of both the majority and minority cultures (Kuh & Love, 2000; Rendon, Jalomo, & Nora, 2000). This body of research supports the idea that students can connect with their institution without breaking ties with their former communities and rejecting their culture and values. Although Kuh's theory is evolved in its incorporation of cultural values, it places an emphasis on time allocated to activities that promote academic outcomes. Kuh argues that student engagement "develop(s) habits of the mind and heart that enlarge their capacity for continuous learning and personal development" (2003, p. 25). The question arises then whether time is the only measure of engagement. Linking time to better outcomes can be problematic for groups of students who have competing demands for their time including working on or off campus or family obligations. As has already been shown, Latino students are more likely to have external commitments that require large portions of their time.

Applicability of Persistence and Engagement Theories to Latino Students

In order to determine whether the definition and constructs of engagement hold in a Latino cultural context, we must examine the definition of engagement and how engagement is measured. To do this, we will revisit the theories utilizing engagement as a pivotal thematic construct and inspect the most popular measure of college student engagement, the National Survey of Student Engagement.

Many scholars have examined the applicability of persistence and engagement theories to minority students and some specifically have examined the experiences of Latino students. When investigating the applicability of Tinto's model to minority students, there have been mixed results. Indeed, empirical research provides only modest support for the theory (Braxton & Lee, 2005; Braxton, Sullivan, & Johnson, 1997). Tinto's model calls for a breaking away from home communities in order to facilitate successful transition to college. When examining Latino students' transitions to college, Hurtado and Carter (1997) found that maintaining family relationships during the first year was vital to Latino student transition. In fact, they recommended strengthening the engagement between Latino families and the institution as a way of encouraging family relationships with their students. Laden (2001) corroborated this finding with a study of her own in which she explained that although Latino parents often have limited experience with college, or English proficiency, they openly encourage their children to attend college when they have access to information about the process of applying and benefits of attendance. She notes that the literature suggests that incorporating families and encouraging the maintenance of community ties is important to Latino student success.

Not only have family ties been shown to assist in the application and transition to college but, they have also been linked to student persistence. Gloria and Castellanos (2012) discovered that students often found strength to persist through their educational processes from their ties to family and the community. The research of Fisher (2007), Chiang, Hunter, and Yeh (2004), Cabrera et. al. (1999), Delgado Burnal (2002), Eimers

& Pike (1996), Gloria et. al. (1999), Gonzalez (2000), Guiffrida (2004, 2005), Hendricks et. al. (1996), Hurtado, Carter and Spuler (1996), Nora & Cabrera (1996), and Rosas & Hambrick (2002) all support the notion that maintaining supportive linkages with family results in higher rates of persistence for Latino students.

Kuh's model of student engagement has experienced mixed results when applied to Latino students. Several researchers (Nora, 1997; Otero, Rivas, & Rivera, 2007) found evidence to demonstrate the value of out-of-class opportunities to socialize with other students but Baker (2008), Cole (2008), and Museus, Nichols, and Lambert (2008) had results indicating that Latino involvement in certain social activities may negatively affect students' grades and/or odds of graduation. However, a substantial amount of research has found that students' interactions with supportive individuals, including positive interactions with faculty members, mentors, parents, peers, and Latino communities, contribute in meaningful ways to Latino students' grades and persistence decisions (Crisp, Taggart, & Nora, 2014). In his qualitative study of Latino student persistence, Hernandez (2002) found that successful students cited the support of family as a major contributor to their decision to persist. Likewise, the support of a peer network and social engagement such as campus clubs and organizations was a contributing factor to persistence. Students also expressed that connecting to a Latino community helped them cope with the challenges associated with being a college student. This was particularly true for students attending predominately White institutions. Cabrera et al (1993) identified academic engagement activities as participation in academic discussions and activities on and off campus as important to Latino students'

goals of completing a degree and remaining in college. Fisher (2007) proposed that academic engagement is manifested in the ties students form with professors through engagement with course work, participating in class, participating in enrichment activities such as tutoring and learning groups. Engagement in academic life leads to social engagement as connections are formed with classmates. Her study (2007) found that engagement in academic life of the institution was related to higher GPAs and higher likelihood for retention and satisfaction with the institution. Likewise involvement in formal social activities like clubs and organizations was positively related to GPA and satisfaction with the institution. Specifically for Latinos, having off-campus ties was marginally significant and positively related to persistence. These findings would suggest that for Hispanic students, separation from communities of the past would not facilitate a smoother transition to college and persistence but instead contribute to withdrawal. In addition, positive and supportive connections to faculty, staff, mentors, and peers contributes to persistence and decreases the likelihood of withdrawal.

It is clear from this quantity of scholarly literature that although different types of engagement may have different levels of contribution toward persistence (or retention), engagement is a factor in Latino college completion and more research is needed to understand that relationship.

Measuring Engagement

The theory of student engagement contributed to the creation of metrics to determine types and amounts of engagement. These metrics are measured through student answers to a survey called the National Survey of Student Engagement (NSSE).

The NSSE results have often been "treated by some postsecondary institutions as a proxy for student learning despite the fact that the survey was designed primarily to provide process indicators, or measures, that could help colleges and universities identify areas of student performance and institutional practices that could be improved to enhance the overall quality of the student experience" (Ewell, & Jones, 1996). The survey also offers an interesting area of study, namely identifying the types of activities and programs that most often contribute to higher levels of academic achievement and increased learning outcomes. The NSSE asks questions in five categories, educationally purposeful activities, institutional requirements, perceptions of features of the college environment that are associated with achievement, satisfaction and persistence including the extent to which the institution offers the support students need to succeed academically and the quality of relations among various groups on campus such as faculty and students, demographic and background information, and estimates of general and personal growth (Kuh, 2009). Educationally purposeful activities include things like faculty and peer interaction, time spent studying, or co-curricular activities, and working on or off campus. The questions concerning perceptions of features of the college environment that have been associated with achievement are only related to persistence and therefore only indirectly related to desired outcomes. Institutional requirements would encompass things like the amount of required readings and writing assignments. The questions concerning estimates of general and personal growth focus on general knowledge, intellectual skills, written and oral communication skills, personal, social and ethical

development and vocational preparation. The construction of survey items attempt to measure the time and effort students invest in these identified high impact areas.

The construct of "engagement" is built on the premise that time and effort invested in the college experience are determinant of whether students are successful but does not recognize intercultural effort. Intercultural effort is defined by Tanaka (2002) as the effort necessary to counter negative pressures experienced by members of racial/ethnic groups that are in the minority at predominantly white institutions. Or, put another way, the effort to "counter idealized academic and social categories that create hierarchies based on race" (Dowd, Swatzaky, & Korn, 2011, p. 27). The magnitude of this loss could lead to attrition. In fact, it has been argued that minority students may lose connection to cultural and home communities as they invest more time in education (Musus & Marimba, 2011; Nunex, 2009) and that this loss may be detrimental and even harmful for them (Rendon, 1992, 1993; Rendon, Jalomo, & Nora, 2000; Hurtado & Carter, 1997).

There is a flawed assumption that college campuses are "culturally neutral spaces" (Dowd, Sawatzky, & Korn (2011) p. 18). Individual campuses have their own cultures and cultural norms which are a reflection of the ideas, beliefs, and values of the dominant cultural group. Without a recognition of these underlying cultural environments, Tanaka (2002) warns that researchers run the risk of under-estimating the effects of campus culture on minorities and overestimate the importance of effort to engage when students may believe further effort would be detrimental to their sense of self-worth. For these reasons, researchers must redefine our traditional ideas of what

engagement is, how students engage, and how we measure that investment of time and energy.

Indeed, scholars have called for measures of dimensions such as student perception of marginalization or racism (Cabrera, Nora, & Castaneda, 1993; Harper & Hurtado, 2007; Hurtado, Milem, Clayton-Pederson, & Allen, 1998; Gonzalez, Stone, & Joel, 2007; Nora & Cabrera, 1996; Tanaka, 2002), feelings of isolation or alienation (Schwitzer, Griffin, Ancis, & Thomas, 1999; Alford, 2000), cultural "distance" between the culture of origin and the culture of immersion (Kuh & Love, 2000; Museus & Quaye, 2009), sense of belonging (Hurtado & Carter, 1997), lack of voice and disparities of power in the classroom (Osei-Kofi, Richards, & Smith, 2004), loss of connection to family (Rendon, 1993; Rendon, Jalamo, & Nora, 2000), micro-aggressions (Sue, Capodilupo, Torino, Bucceri, Holder, Nadal, 2007; Yosso, Smith, Ceja, Solorzano, 2009), and cultural suicide (Museus & Maramba, 2011). In their examination of various scales of engagement that contain elements of intercultural effort, Dowd et al (2011) suggest survey items that explore students' feelings of support from different campus groups (i.e. peers, faculty, administrators), perceived intergroup interactions, whether students had addressed meanings of cultural identity or power during class, and perceptions of the classroom environment. Although the 2013 UNC Sophomore survey was not designed with intercultural effort in mind, there are several items in the survey that do address some of the above mentioned themes. Some examples include, the students satisfaction with "The extent to which they [instructors] encourage class discussion (item A.1d); Opportunities on campus to interact with or learn from people

from a range of racial/ethnic or cultural backgrounds (item E.2.c); and The ease with which I can get involved in campus organizations (item E.2.b). Other survey items investigate a student's sense of belonging at the institution such as, I am confident that I made the right decision to attend this university (item F.1.a) and I feel I belong at this institution (F.1.c). A full description and discussion of survey items will be provided in Chapter III.

Sense of Belonging

Engagement is a concept which has been identified in the literature as a factor contributing to student persistence and commitment to their goal of completing a degree as well as their commitment to a particular institution. As has been stated, engagement is the result of the interaction between the student's background characteristics and their experience on campus. If the experience is positive, students are more likely to engage. If the experiences are negative, students are more likely to attrite. Positive experiences can lead to engagement which results in a sense of belonging at the institution and ultimately persistence at the institution. The concept of sense of belonging has come to be particularly important for minority students. Sense of belonging denotes a sense of acceptance and membership without the requirement that a student make changes in order to "fit in" or integrate. The concept of sense of belonging is an evolution of the construct of "integration". If a perception of belonging exists, students have the ability to maintain affiliations with multiple communities while still establishing themselves within the culture of the institution (Hurtado, & Carter, 1997). The absence of sense of acceptance

prevents students from becoming engaged as they may feel that in order to be accepted they must make changes that are contrary to their values or belief systems.

Hurtado, Carter, & Spuler (1996) identified sense of belonging as a highly important factor in Hispanic student persistence. In a later study, Hurtado and Carter (1997) applied Tinto's model to Latino students and tested the extent to which their background characteristics and academic and social experiences in the first and second year contributed to a sense of belonging in their third year. What they found was that sense of belonging for Hispanic students is closely linked to the frequency with which they engaged in discussions with other students outside of class and membership in religious and social-community organizations. Nora and Cabrera's (1996) work examined the relationship between Hurtado and Carter's findings related to sense of belonging, academic and social involvement, and engagement. Academic and social involvement and engagement were found to be predictive of stronger senses of belonging and further, a sense of belonging counteracted the negative perceptions of discrimination and prejudice. In addition, Nunez (2009) discovered that faculty interest in student development and a sense of obligation to the community was related to Latino students' sense of belonging even on a racially hostile campus.

Students who have a sense of belonging on campus have found a mechanism for connecting to that institution. Nagasawa and Wong's (1999) model of minority student survival provides an example of this connection through an emphasis on student membership in subcultures which are supportive and understanding of students' existing values and culture. Institutions with small numbers of minority students tend to absorb

these students into the main culture of the campus. Institutions with larger numbers of minority students however, often do not absorb minorities into the campus culture enhancing their visibility of minority students as "other". Minority students who are not absorbed into the campus culture have a more difficult time surviving college. Nagasawa and Wong (1999) deduce that when students are more academically equipped to succeed in college they are better able to find membership and value academically and the fact that they have made little connection to other minority students is less important.

Students who have not found this academic connection and/or have not been absorbed into the campus culture must have another way to connect to the institution. The model of minority student survival identifies student subcultures as a mechanism for connection and persistence. Nagasawa and Wong use the terms "racial social networks" or "peer clusters" to define these subcultures. Illustrating this concept, Latino first-generation college students were found to form networks where they gained support, found refuge, and felt validated (Gloria, & Castellanos, 2012). In his study of first-generation college students of Mexican origin, Benmayer (2002) discovered that in order to combat a sense of invisibility, students relied on cultural resources of support, including student organizations and affirmative action. These supports were so impactful that they were considered by the students to be extended *familia* and allowed them to be both members of campus and their communities. *Familia* illustrates that first-generation college students of color need to perceive that there are specific, safe spaces in which they may seek and strengthen connections to on-campus support networks (Hsia, 1992).

The commonality is that culture, values, and belief systems are important aspects of identity. Maintaining one's identity while embarking on the journey to a college degree is important for all students. However, when one's cultures, values, and beliefs are different or perceived to be in conflict with those of the environment, it can be difficult to establish membership in that environment. The absence of belonging is isolation and isolation can lead to the inability to properly engage and commit to one's goals. Engagement, involvement, and sense of belonging are essential to the success of minority students. It is important to recognize that forms of engagement and integration may be different for students with different cultural backgrounds. Theories of persistence must begin to integrate culturally relevant perspectives to truly measure engagement for Latino students. In order to move toward that goal, concepts of engagement must be deconstructed to determine whether they are applicable outside the dominant context.

Summary

The varied results from previous research clearly display the need for continued study to understand the contributing factors for Latino student persistence and completion. Such research must acknowledge the cultural value present in maintaining ties with family and culture and move toward a collectivist model in order to create culturally sustaining theories and models of Latino student persistence. Past research has uncovered a variety of engagement areas that contribute to persistence for Latino students. These include, academic engagement (referring to the classroom environment and engagement in academically related activities), co-curricular engagement (referring to activities that support academic growth such as tutoring), and peer engagement

(referring to involvement in student organizations and leadership experiences). However, the effects of these engagement activities on completion are varied and sometimes contradictory. The present study will seek to explore the contributions of various forms of engagement on Latino student persistence and whether the survey items measuring these constructs apply in the same ways for Latino students as they do for other racial/ethnic groups. These two areas are chosen due to the strong linkage between academic engagement and persistence and the mixed findings related to peer engagement for Latino students and the likelihood that the constructs exist in the UNC Sophomore Survey. The researcher is interested in understanding whether the interaction between academic and peer engagement increases the likelihood of completion. In addition, socioeconomic status and academic preparation will also be included as independent variables due to the consistent finding in the literature that these two demographic characteristics are linked to student success.

This study is limited to Latino students for several reasons. First, there is a true gap in the literature in exploring Latino baccalaureate completion. There are many studies investigating the linkage between various factors and retention to the second or third year, studies that investigate the reasons for Latino withdrawal, and studies that investigate the correlation between college experiences and commitment to the institution or the goal of completing a degree. Less research has examined the factors contributing to completion for persisters. The present study seeks to fill that gap. There is also little research questioning the differences in engagement constructs and theory between minority and majority students. As more institutions use engagement surveys to

determine their performance, it is important to understand how to interpret the results of those surveys.

Practically, the examination of this issue is important to American Higher Education as a whole due to the increase in the Latino college-going population. Particularly for North Carolina, the researcher's home state, and even more specifically, the UNC System, Hispanic/Latino students are representing increased proportions of UNC enrollment, as well as higher education enrollments overall. In the fall of 2013, 10,440 Hispanic/Latino students enrolled at UNC campuses, representing 4.7% of total enrollment. These students accounted for 5.2% of undergraduate enrollment and 3.2% of graduate enrollment. Latino student enrollment has grown dramatically over the years at UNC campuses, increasing 339.2% since 2000 and 995.5% since 1990. Following general population trends in North Carolina, Latino students will constitute an increasingly large percentage of the college-going population. Among North Carolinians who will reach college age in the next 14 years, Latino students show the greatest projected increase in student population (+62%) when compared to the population growth of White (-11.5%), African American,(-10.2%), and others racial/ethnic student groups (+27.5%). Unlike other states who have a rich history of serving Latino students, North Carolina is only beginning to learn how best to serve this new demographic of student. This research is relevant for any higher education institution or system serving Latino students but, perhaps more relevant for institutions that are serving greater numbers of Latinos for the first time.

Chapter three will describe the methodology to be used in the forthcoming study including a discussion of the research questions, description of the research approach and paradigm, a description of the variables to be included in the study, and the limitations present.

Chapter III: Overview of Methodology

The purpose of this study is to examine the extent to which the variables socio-economic status, academic preparation, and engagement are related to completing a baccalaureate degree at a four-year public university, explicitly for Latino students, and if so, which variables or combination of variables are more highly correlated with completion. Combining a post-positivist research approach and a critical lens in this study will allow the researcher to contextualize the difference in the higher education experiences of Latinos. Specifically, the research question is whether (and to what extent) there is a relationship between hypothesized constructs of engagement, socio-economic status, and academic preparedness on Latino baccalaureate completion.

As previously mentioned, the data for this study come from the 2013 UNC Sophomore Survey administered to all students enrolled at one of the 16 constituent UNC universities. Survey responses have already been collected by the University of North Carolina General Administration (UNC-GA). UNC-GA identifies eligible participants by extracting names and email address from the student data information system. Eligible students receive the survey via email. The survey items are measured using a Likert Scale. There are 119 survey items, seven items collecting demographic data were removed due to these data being collected via the UNC Student Data Mart resulting in a total of 117 survey items.

Three sections of the survey (B, C, and D) included responses such as not applicable, no experience to judge, or do not know. These questions and responses were not treated or coded differently. Several questions throughout the survey listed ordinal

responses versus Likert Scale responses. SPSS does not support ordinal data in an Exploratory Factor Analysis procedure and therefore these responses were treated as scale data instead of ordinal data. Adjusting for these differences would not have drastically changed results although it does introduce skewness in the responses and could result in overestimation of the number of factors present (Basto, M and Pereira, J.M., 2012).

The purpose of the 2013 UNC Sophomore Survey is to gauge the student satisfaction with the institution in key areas and determine their level of engagement. Several categories are covered within the survey, academic environment and advising, help received outside of the classroom, satisfaction with the service of other offices, campus safety, on-and-off campus activities, and sense of belonging.

Participants

Sophomore students who are eligible to participate in this survey have completed between 30 and 60 semester credit hours. The overall survey response rate was 38%. The total sample of responses received from this survey yielded 5,765 individual responses. Table 1 summarizes the demographics of the entire sample. These distributions are similar to what one would expect to find in the overall student body of UNC students system-wide.

Table 1
Demographics of Sample

Response Rate	**38%**									
	Latino	African American	White	Asian	American Indian/ Alaska Native	Hawaiian/ Pacific Islander	Two or More Races	Unknown	Non-Resident Alien	**Total**
Male	89	353	1298	59	12	2	58	31	35	1937
Female	166	982	2305	93	20	0	123	70	23	3782
Total	255	1335	3603	152	32	2	181	91	58	5719

Table 1 Demographic Sample Table

Measures

The dependent variable in this study will be measured on the basis of the individual's enrollment status as of May 2016. Individuals will be coded as having completed a baccalaureate degree/being currently enrolled or no longer enrolled. Therefore, the dependent variables are baccalaureate degree completion/persistence or not completing a baccalaureate degree/persisting. The independent variables in this study include, socio-economic status, academic preparation, and the hypothesized constructs of engagement. Each variable is described in more detail below including how they are measured, the levels of each variable; and the log odds equations.

Dependent Variables.

- *Baccalaureate Completion* is a binary variable measured by whether the individual has completed a baccalaureate degree by May 2016. If a student continues to be enrolled or has completed a Baccalaureate degree enrolled respondents will receive a code of 1.
- *Persistence* is a binary variable measured by whether the individual is still enrolled in May 2016. If a student has completed a Baccalaureate degree or continued to be enrolled respondents will receive a code of 1.

Independent Variables.

- *Socio-economic Status* is a categorical variable measured by whether a student is eligible for a Pell grant. This variable will be provided through UNC's Student Data Mart.

- *Academic Preparation* is a categorical variable measured through an individual's high school GPA. This variable will be provided through UNC's Student Data Mart. Students will be categorized as being academically prepared or not utilizing a GPA cut score of 3.0. This threshold was recently identified in a study conducted by UNC General Administration to determine the extent to which GPA contributes to degree completion.

The selected independent variables were chosen based on a review of the scholarly literature which identifies each of these as important factors for Latino students who have completed a Bachelor's degree. Particularly for Latino students, the presence of on-campus networks of support has been proven to be important to their retention and persistence. Strong ties to family and home communities have also been linked to retention and persistence for Latinos (Cabrera, Nora, Terenzini, Pascarella, Hagedon, 1999; Delgado, 2002; Emers & Pike, 1996; Gloria, Robinson-Kurpius, Hamilton, & Wilson, 1999; Gonzalez, 2000; Guiffrida, 2003, 2005; Hendricks, Smith, Caplow, & Donaldson, 1996; Hurtado, Carter, & Spuler, 1996; Murguia, Padilla, & Pavel, 1991; Nora, 2001, Nora, & Cabrera, 1996; Padilla, Trevino, Gonzalez, & Trevino, 1997; Rosas & Hambrick, 2002). The available data provides mechanisms by which the extent of engagement with campus communities, both academic and peer, can be associated with the outcome of completing a four-year degree and a way to examine which of these (if either) are stronger contributors to completion.

Academic preparedness, and in particular high school GPA, and socio-economic status have been studied extensively in terms of their relationship with college completion. These variables have been established by many researchers as being

important factors in whether a student will complete a four-year degree. For that reason, these variables are included in this research model. To omit them from the model would be a theoretical oversight.

These independent variables will be used to develop models which will be tested during the logistic regression analysis. The models to be tested include:

$$\ln(\frac{\hat{p}}{1-\hat{p}}) = \beta_1 X_1 + \beta_2 X_2 + \beta_0$$

Where X_1= Academic Preparation, X_2= Socio-Economic Status, and X_3-X_k= Engagement Constructs

$$\ln(\frac{\hat{p}}{1-\hat{p}}) = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_k X_k + \beta_0$$

Research Design

Paradigm of Inquiry. The present study is a quantitative research design utilizing post-positivism as the paradigm of inquiry. Post-positivist paradigm holds that research is subjective and hypothesis cannot be proven only accepted or rejected. Data is representative of specific contexts and therefore is not objective and must be interpreted with these contexts in mind. The research questions of this particular study lend themselves to post-positivism due to the basic understanding that different demographic groups of post-secondary students have different experiences in different settings which affect academic outcomes. These nuances must be recognized when conducting research to examine academic outcomes for minority students.

Research Approach. The researcher has chosen a critical approach to guide this study. A critical approach is appropriate due to the population of interest and the lack of theories applicable to understanding the experiences of Latinos who are successful in

completing a baccalaureate degree. Through a critical approach, available conceptual and theoretical frameworks can be questioned and tested in order to move toward a more culturally sustaining model of Latino college completion. Critical theory seeks to understand the experiences of individuals and groups while considering cultural constraints and societal prescriptions, identifying power's role in structuring human subjectivity, acknowledging the importance of cultural difference, investigating the ways in which science is defined and changed, and extend theory to action (Stage, 2007). Critical quantitative approach is appropriate for this specific study as it seeks to quantitatively understand the predictors contributing to completion for a specific population of minority students. Not only have researchers attempted to explain the experiences of these students using theories, concepts, and approaches that were initially designed for white, middle and upper class students but, they have used them to explain why students do not persist. This study seeks to further previous theories and constructs by examining the predictors relevant for completion among Latino students. The researcher's goal is to further the conversation about how best institutions can support completion for Latino students but also to reframe the discussion to focus on success rather than failure.

Types of Analysis. In order to answer the research questions presented in this study, two types of quantitative analysis will be utilized, Exploratory Factor Analysis and Logistic regression. Both analyses will be performed using Statistical Package for the Social Sciences (SPSS) Version 23. In order to identify the constructs of engagement present in the 2013 UNC Sophomore Survey and create factor scores, Exploratory Factor Analysis (EFA) will be performed on the survey instrument.

Exploratory Factor Analysis is best suited for the identification of latent constructs present within a survey instrument. EFA is also used to generate hypothesis regarding the possible structures of these latent constructs. Because this survey has never been examined for the constructs underlying the survey items, EFA is the best analytical choice. The specific research questions to be examined using EFA include

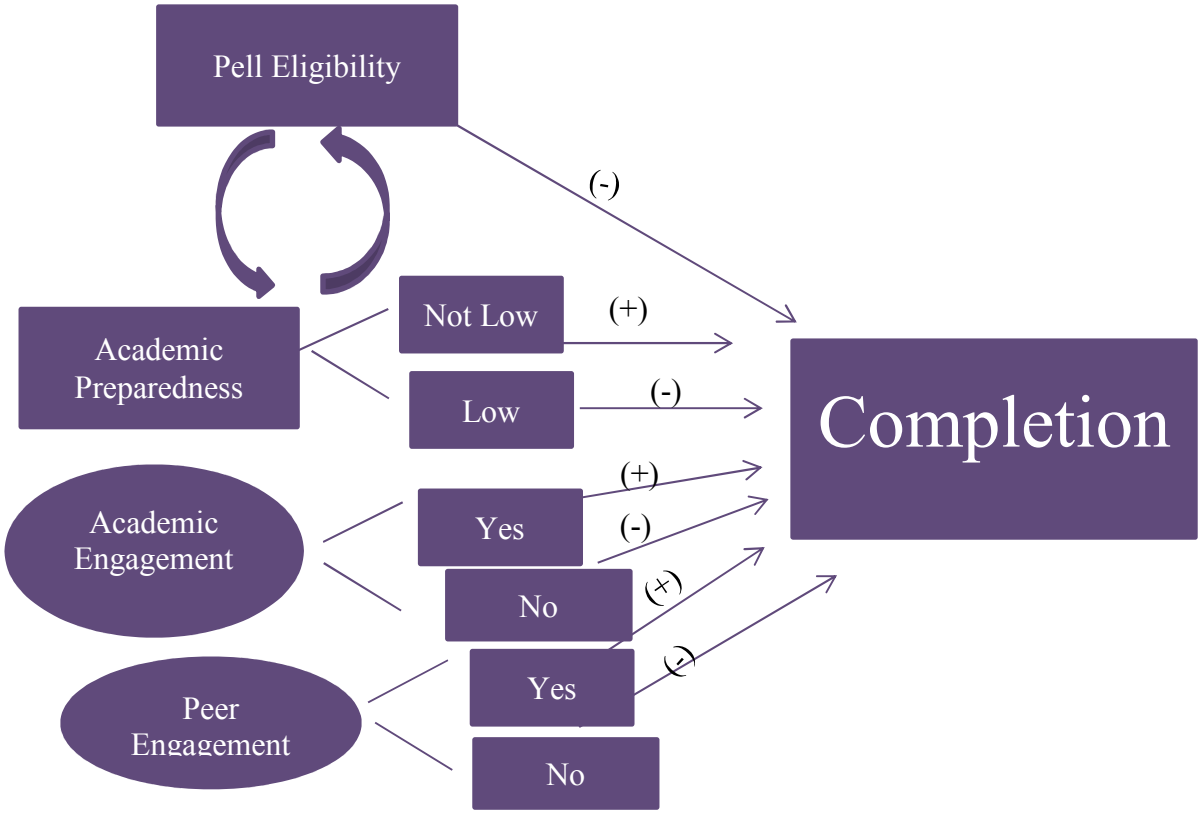
Logistic regression will be performed to determine the strength and direction of the set of demographic (socio-economic status and academic preparation) and engagement predictors with completing a baccalaureate degree/persisting. The strength and direction of the relationship will be examined to determine which set of predictors does the best job of predicting group membership against the model with no predictors (the null model). The results of the analysis will also be examined to determine importance of each of the predictor variables and interaction variables, or the extent to which (if at all) each of the variables increases the likelihood of group membership.

Logistic regression is best suited for this study for several reasons: 1) the dependent variable under examination is a binary variable 2) the independent variables are categorical, 3) logistic regression provides a mechanism by which different models can be compared to one another and 4) logistic regression does not require that data be normally distributed, linearly related, or have equal variance between groups. The present study's focus is to determine the best model fit and the extent to which (if at all) each variable increases the likelihood of group membership. Logistic regression is best suited to this focus.

Conceptual Framework

The conceptual framework for this study is illustrated in Figure 1below which depicts the hypothesized relationship between the predictor variables and the dependent variable based on the literature. The independent variables of academic preparation and socio-economic status have been shown in the literature to be correlated and the curved arrows between them depict this relationship. Low levels of academic preparation and low socio-economic status have been shown to be correlated with lower levels of academic achievement in terms of degree completion. The categories of each independent variable depict the relationship between them and the dependent variable based on the literature. The final independent variables of academic engagement and peer engagement depict their hypothesized relationship with the dependent variable of degree completion. Where these types of engagement are present, there is a hypothesized positive relationship with degree completion. Where these types of engagement are absent, there is a hypothesized negative relationship with degree completion.

Figure 2: Engagement's Relationship to Post-Secondary Completion for Latino Students



Research Procedures

Data Preparation. The first step in preparing the data will be examining the type of missing data present in the sample.

Missing Data. Survey data were examined to determine the extent data were missing and to identify the type of missingness present in the data. The overall pattern of missing data was examined for the full data set of survey responses using the Missing Value Analysis module in SPSS. All variables (survey items and high school GPA) have missing data. Fifty-nine percent (59.15%) of cases have missing data and 4.95% of values are missing in the sample. Of the individual survey items, 93.55% of individual items contained missing data. These percentages are too high to conduct listwise deletion or exclude cases with missing data. Data imputation is necessary to retain as much data as possible.

To ensure data imputation is appropriate, several missing data analyses were utilized to determine whether data were missing completely at random, at random, or whether there were patterns in the missing data. To begin, Little's Missing Completely at Random (Little's MCAR) test was conducted to determine whether data were missing completely at random. The resulting test statistics indicated that data were not missing completely at random (x^2 $114770.567, N = 5735, 111054, p < .001$). Examination of the Missing Value Pattern Chart was examined to determine whether or not patterns exist in the missing data—whether monotenacicity is present. The Missing Value Pattern Chart did not indicate monotenacicity and supported that data were missing at random or that missing data was predictable based on variables within the dataset. Finally, separate variance t-tests were conducted between survey items to determine whether data were

missing at random. The mix of statistically significant and non-significant differences in variance between variables indicates the missing values are related to one another or predicted by the observed data. Based on the results of the Littles MCAR test, the missing data patterns, and the t-tests, it was determined that multiple imputation was utilized to impute missing values.

Recoding the data. Each categorical variable in this study will be recoded using dummy coding. Dummy coding specifies that there be one less code than there are categories (k-1). As specified by Cohen, Cohen, West, and Aiken (2003), one group is specified as the comparison group and all other groups are compared to it. This comparison group is given the code of 0 and all other groups are assigned the value of 1, and a value of 0 on all other dummy coded variable(s). For the current study, the variables will be recoded as follows:

Dependent Variables:

- Non-Baccalaureate Completion = 0
- Baccalaureate Completion = 1

By selecting "1" for the baccalaureate completion code, the hypothesis being tested is that the predictor variables contribute to completion which is in keeping with the anti-deficit lens of this study.

Power Analysis. Utilizing benchmarks provided by Cohen (1965, 1988), power analysis computations were performed to identify the necessary sample size to detect significance within the models, partial and semi-partial effect sizes, and differences between models. Table 2 below outlines the results of these computations. Because each model contains the same number of predictors, these results are applicable to all models.

Table 2
Power Analysis for Logistic Regression

Statistical Test	N	α	Power	Effect Size
Multiple R for all models	68	0.05	0.80	0.13
Partial and Semipartial Coefficients	172	0.05	0.80	$R^2 = 0.13$ $sr^2 = .05$
f_{change} between models	196	0.05	0.80	R^2full = 0.13 R^2change = 0.05

Table 2 Power Analysis Table

Based on these results, the sample size of n=255 for Latinos, African Americans (n=1335) and Whites (n=3603) are adequate to test for significance as proposed. Due to the approach to this study and issues of sample size, the sample will be narrowed to include only responses for students who identified their race/ethnicity as Latino, African American, or White. The total sample size including these three racial/ethnic groups is 5,193.

All responses to the survey will be utilized to determine underlying constructs within the survey. To determine the adequacy of the sample size to perform EFA, Hair, Black, Babin, Anderson, & Tatham (2006) recommend of a minimum of a sample that is 5 times the number of variables was used as the threshold for the sample of 5,765 total respondents. The variables in each section of the survey were examined to ensure adequate sample size. Table 3 below illustrates the results. Hair et al. (2006) acknowledge that some researchers establish 20 cases per variable as the minimum

threshold. When applying this higher threshold, all sections exceed the minimum required for EFA. Based on these results, the sample size for the entire population is more than adequate for EFA.

Table 3
Sample Size for EFA

Section	# of Variables	5(# of Variables)	Sample Size Available
A	26	130	5,765
B	27	135	5,765
C	29	143	5,765
D	11	55	5,765
E	11	55	5,765
F	9	45	5,765

Table 3 EFA Sample Size Table

Data Analysis

Two types of analysis will be used in this study, Exploratory Factor Analysis and Logistic regression. Descriptive statistics will also be examined and reported for the sample in order to determine observed group membership. Descriptive statistics to be reported include the number of males and females in the sample, the number of students who graduated and the number of those who did not, the mean and standard deviation for high school GPA, the number of students who were Pell eligible and the number who were not. Descriptive statistics for the 2013 UNC Sophomore Survey will include the

mean scores, standard deviations, skewness, and kurtosis statistics for each survey section.

Exploratory Factor Analysis. Exploratory Factor Analysis will be applied to answer the following research questions. Are there latent constructs present in the 2013 UNC Sophomore Survey? If so, what latent constructs are present?

Assumption Testing. Prior to running the analysis, two assumptions will be tested utilizing the Bartlett's test of sphericity and the Kaiser-Mayer-Olkin Measure of Sampling Adequacy. The Bartlett's test evaluates the hypothesis that the sample matrix is an identity matrix meaning that there are no correlations in the dataset that are appropriate for factor analysis. The Kaiser-Mayer-Olkin Measure of Sampling Adequacy determines whether there are significant correlations among the variables. Table 4 below depicts the hypothesis and tests described above.

Table 4
Normality Assumption Test for EFA

Assumption	Test	Null Hypothesis	Alternative Hypothesis
Normality	Skewness Kurtosis	H_0= SD=1 & Mean=0	H_1= SD≠1 & Mean ≠0
	Bartlett's Test	$H_0= \sigma_1^2 = \sigma_2^2 = \cdots = \sigma_k^2$	$H_1= \sigma_1^2 \neq \sigma_2^2 \neq \cdots \neq \sigma_k^2$ For at least one pair (i_j)
	Kaiser-Meyer Olkin	H_0= KMO < 0.5	H_1= KMO > 0.5

Table 4 Normality Assumption Test

Procedure. The number of factors to extract will be determined by two tests. The K1 "rule", or selecting variables with eigenvalues greater than one, and the examination

of the scree plot. The initial eigenvalues will be examined to identify all factors with values greater than 1. The scree plot will be examined to identify the number of factors present before the plot line levels off. The results of each test will be compared to determine and validate the number of retained factors identified by the researcher. This procedure is in alignment with the recommendation of Hair et al (2006) that these methods be used in concert with one another to provide an optimum number of factors.

Maximum likelihood is the selected method for extraction due to the fact that this data set represents a sample of the overall population of UNC sophomore students. As noted by Bandalos and Finney (2010), maximum likelihood accounts for the utilization of a sample matrix. Maximum Likelihood seeks to obtain the solution that would best reproduce the population correlation values. As an inferential method it allows for a goodness of fit to be obtained. The x^2 goodness of fit test will be examined to determine whether or not the final factor rotation is a good fit for the data. The null hypothesis to be tested is that there are no common factors present in the data (h_0: $d_o = d_e$) The alternative hypothesis is that there are common factors present in the data (h_1: $d_o \neq d_e$).

Survey variables are hypothesized to be correlated and therefore promax rotation will be utilized in this study. As an oblique rotation method it allows for correlation between survey items (Hair et al, 2006 and Bandalos and Finney, 2010).

The parameter value which will be used to retain variables in the factor matrix is ≥0.32. This value was selected for the factor pattern (or loading) based on the sample size and recommendations of Hair, Black, Babin, Anderson, and Tatham (2006) and Bandalos and Finney (2010) who state that larger sample sizes (> 300) can accommodate lower factor pattern values. Values less than 0.32 will be eliminated from the analysis one

at the time and the analysis re-run. In addition, factor structure coefficients will be examined to identify the unique relationship between the factor and the variable plus its relationships with other factors. Once simple structure has been obtained, reliability will be tested utilizing Cornbach Alpha scores. Finally, factor scores will be calculated on each construct of engagement identified through this analysis using SPSS 23.

Logistic Regression. Prior to running the analysis, several assumptions will be examined to ensure the results will be valid. First, logistic regression requires the dependent variable to be dichotomous. Second, there should be at least one independent variable and can be either continuous or categorical. Third, the dependent variable should have mutually exclusive and exhaustive categories along with independence of observations.

After each assumption has been checked, the Logistic Regression procedure will entail testing multiple nested models to determine which model and which independent variables best predict group membership. Therefore two tests are necessary, a test of the models and a test of the individual predictors. Before conducting the logistic regression, the variables will be examined for their correlations. Namely, the research question, *Is there a statistically significant correlation between the dependent variable of college completion and independent variables, academic preparation, socio-economic status, and engagement constructs?* To test this research question, Pearson's "r", or the correlation matrix will be used to determine whether there are correlations and which correlations exist. The null hypothesis is that there are no correlations among the variables (h_0: $r = 0$). The alternative hypothesis is that there is a correlation among the variables (h_1: $r \neq 0$).

Tests of the Models. Several model tests will be utilized to answer different research questions. The first test of models will be a comparison of the null model (model with no predictors) against a model with the predictor variables academic preparation and socio-economic status. This provides a baseline against which to compare prediction from other models that contain predictor variables (Cohen, Cohen, West, Aiken, 2003). The Omnibus Test of the Model will be used to determine whether the full model predicts completion better than the null model. This test examines the deviance between the models in order to determine which model best predicts group membership between the null and saturated models.

Hosmer-Lemeshow test will be used to determine whether the model is a good fit for the data and is useful when sparse cells are present in the data (Cohen, et. al., 2003). Distribution of respondents is skewed to those who have graduated or persisted and therefore sparse data is present in the cell for students who have not graduated or persisted. Specifically, the Hosmer-Lemeshow tests the null hypothesis that the actual and predicted event rates are the same in both the null and full models. -2 log likelihood will be examined to determine which of the proposed nested models best fits the observed data in comparison to one another. The null hypothesis to be tested is that each of the proposed nested models have the same predicted event rates. Because the Hosmer-Lemeshow statistic is a conservative test, comparing the results of both the -2 log likelihood and the Hosmer-Lemeshow will provide a way to confirm the results of each test. Each test will answer the research question, *Do the saturated models predict completion better than the null model and which model best predicts completion when compared to one another?*

Tests of the Predictors. In order to test individual predictors, the Wald Test Statistic will be examined to determine which variables (if any) are statistically significant. The Wald Test provides the statistical significance for each estimated coefficient and allows the researcher to interpret the coefficient in terms of how it impacts the estimated probability and prediction of group membership. The null hypothesis to be tested is that the coefficients for each variable are equal to zero. The Wald Test is recommended for nested models (Hancock and Mueller, 2010). Odds ratios will also be examined to identify which predictors are responsible for how much variance in the odds that a respondent will graduate or persist. The research questions the Wald Test and Odds Ratio will answer are, *which variable coefficients (academic preparation, socio-economic status, or engagement constructs) are statistically significant?* And, *which variables have the largest effect size relative to completion?*

Table 5 below illustrates each research question, the test to be utilized to answer the question and the null and alternative hypothesis for those tests

Table 5
Research Questions, Statistical Method, and Hypotheses

Research Question	Method	Null Hypothesis	Alternative Hypothesis
Is the rotated factor matrix a good fit for the observed data?	x^2 Goodness of Fit Test	H_0: $d_o = d_e$ (rotated factor model fits the data)	H_1: $d_o \neq d_e$ (rotated factor model does not fit the data)
Is there a statistically significant correlation between completion and the predictor variables (academic preparation, socio-economic status, and constructs of engagement)?	Pearson's "r"	H_0: $r = 0$	H_1: $r \neq 0$
Does the reduced model (academic preparation + socio-economic status) Predict completion better than the null model (model with no predictors)?	Omnibus Test of the Model	H_0: $\beta_1 = \beta_2 = \ldots = \beta_k$	H_1: at least one pair $\beta_j \neq \beta_{j'}$
Does the full model (academic preparation + socio-economic status + constructs of engagement) predict completion better than the null model (model with no predictors)?	Omnibus Test of the Model	H_0: $\beta_1 = \beta_2 = \ldots = \beta_k$	H_1: at least one pair $\beta_j \neq \beta_{j'}$

Table 5 Research Questions

Table 5 Continued
Research Questions, Statistical Method, and Hypotheses

Research Question	Method	Null Hypothesis	Alternative Hypothesis
Does the reduced model (academic preparation + socio-economic status) predict completion better than the full model (academic preparation + socio-economic status + constructs of engagement)?	Omnibus Test of the Model	H_0: $\beta_1 = \beta_2 = \ldots = \beta_k$	H_1: at least one pair $\beta_j \neq \beta_{j'}$
Which proposed model best fits the observed data?	Hosmer Lemeshow Test	H_0: $d_o = d_e$	H_1: $d_o \neq d_e$
How does model fit compare between the nested models	-2 log likelihood	H_0: $-2LL_{\text{reduced model}} = -2LL_{\text{proposed}}$	H_1= $-2LL_{\text{reduced model}} \neq -2LL_{\text{proposed model}}$
Are the coefficients for each predictor variable in the model statistically significant	Wald Test Statistic	H_0: $\beta_j = 0$	H_1: $\beta_j \neq 0$
Which variables have the largest effect size?	Odds Ratio	H_0: $r_{x_1} = r_{x_2} = r_{x_3} \ldots r_{x_k}$	H_1: $r_{x_1} \neq r_{x_2} \neq r_{x_3} \neq \cdots r_{x_k}$

Table 5 Hypothesis Test Table

Limitations

As previously discussed, a limitation of this study is that the effect of institutional type is not accounted for in the research design due to the fact that the resulting sample for each institutional type would be too small. Therefore, the relationship between institutional type, the independent variables, and baccalaureate degree

completion/persistence cannot be identified. In addition, the use of a survey instrument where constructs have been identified through EFA, and imputation of missing data, will generate results that cannot be generalized to other Latino populations. Finally, the use of this population excludes students who may have transferred from another institution with credit hours just outside the range of those captured here resulting in a group of students with characteristics that may have provided additional context for answering the research questions. Likewise, students who responded may be students who are already more likely to be engaged and have a sense of belonging which could present bias.

The timeframe during which this survey data was collected also presents some interesting implications for interpretation. In 2012, the United States was experiencing a national recession during which state funding for higher education was being reduced. Although North Carolina remained one of the State's with the highest subsidy for higher education, there was a decline shifting the burden for the cost of attendance from the state to students and their families. This shift correlated with rising tuition costs, lower wages, and higher unemployment as well as concerns over the cost of higher education and the return on investment. This context is important to keep in mind when interpreting results.

Although generalizability is limited for the reasons mentioned above, this research provides useful insight to other states with similar demographics to North Carolina. In 2010, the US Census Bureau (https://www.census.gov/quickfacts/NC) estimated that there were 9,535,688 people in North Carolina, 68.5% were White, 21.5% were Black or African American, 1.3% were Alaska Native or American Indian; 2.2% were Asian; 0.1% were Hawaiian for Pacific Islanders; 2.2% were two or more races;

8.4% were Latino. The median family income was $46,868 and 16.4% of the population was impoverished.

Human Participants and Ethical Considerations

Institutional Review Board: This study does not meet the federal definition of human subjects research because the dataset comes from a secondary data source and the researcher will have no contact with the participants and no identifying information will be included in the dataset. Therefore, an exemption will be requested through The George Washington University Institutional Review Board.

Researcher Subjectivity: Although I am not of Latino heritage, my social interests of improving access and completion for low-income, first-generation, and minority students is certainly a factor in this research study. I do identify as a first-generation, low-income student and therefore feel that my experiences in post-secondary education have some similarities to the experiences of Latino students, who often share these demographic characteristics. One niece and two nephews have Latino heritage and it is important to me that they are successful in post-secondary education.

As a higher education administrator, my professional goals include improving access, experiences, and completion for all students which attend UNC System institutions. As the Latino population increases in North Carolina and likewise, Latinos represent larger percentages of our enrollment, it is imperative that the variables related to success are identified so that University administrators, faculty, and practitioners might begin to develop strategies to promote the presence of these variables at scale.

My interest and feelings on improving Latino college completion must be acknowledged so as not to interfere with the immediate study.

Summary

This chapter presented the methodology for the forthcoming study. Responses from the 2013 UNC Sophomore Survey will serve as the primary data source to answer six questions related Latino students successful completion of a baccalaureate degree. The independent variables were selected for this study based on a careful review of the literature and the outcome of the EFA. They include: Socio-economic Status, Academic Preparation and constructs of engagement. The dependent variable is a binary variable, completion of a baccalaureate degree/persistence or not completing a baccalaureate degree/persisting. Exploratory factor analysis and logistic regression will be used to address the research questions.

Chapter IV: Presentation of the Data

The purpose of this study is to analyze whether traditional definitions and constructs of engagement hold in a Latino cultural context. Specifically this study will examine the extent to which the variables socio-economic status, academic preparation, and engagement are related to completing a baccalaureate degree at a four-year public university, explicitly for Latino students, and if so, which variables or combination of variables are more highly correlated with completion. The research question of interest is whether (and to what extent) there is a relationship between hypothesized constructs of engagement, socio-economic status, and academic preparedness on Latino baccalaureate completion.

This chapter is organized as a report of the data and will include discussion of data related to the 2013 UNC Sophomore Survey and related analysis as well as analysis related to the logistic regression analysis of the variables previously mentioned. To begin, descriptive statistics related to the 2013 UNC Sophomore Survey, the results of missing data analysis, and the results of the Exploratory Factor Analysis are presented. A discussion of the resulting logistic regression analysis concludes the chapter.

Descriptive Statistics

The total sample of responses consisted of 5,765 individual responses for a total response rate of 38%. Male respondents made up 33% of the overall sample and females made up 67% of respondents. Pell eligible students made up 44% of the overall sample and 87% of students in the sample graduated or persisted by May 2016. Latinos made up 4% of the overall sample followed by African Americans at 23% and Whites at 62%. Within these populations, 63% of Latinos were Pell eligible, 88% graduated or persisted,

34% were male and 66% were female. Seventy-six percent of African American respondents were Pell eligible, 81% graduated or persisted, 26% were male and 74% were female. Among White respondents, 29% were Pell eligible, 89% graduated or persisted, 38% were male and 62% were female. These distributions are similar to what one would expect to find within the overall UNC population with exception to the graduation rates which are slightly higher than average for Latinos and African Americans. Tables 6 and 7 summarize these statistics for the overall sample. Table 8 provides statistics for the Latino respondent sample specifically.

Descriptive statistics for each of the survey items as well as academic preparation (high school GPA) were also examined including the mean, standard deviation, skewness and kurtosis revealing that the data are approximately normally distributed. In order to be considered normally distributed statistics for skewness must be < 2 and statistics for kurtosis must be < 7 (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Appendix B displays these descriptive statistics.

Table 6

Descriptive Statistics for Overall Sample-Race and Pell Eligibility

	Latino	African American	White	Asian	American Indian/ Alaska Native	Hawaiian/ Pacific Islander	Two or More Races	Unknown	Non-Resident Alien	Total
Pell Eligible	163	1022	1076	90	24	1	81	62	10	2529
Not Pell Eligible	92	313	2527	62	8	1	100	39	48	3190
										5719

Table 6 Descriptive Statistics Race and Pell Eligibility

Table 7

Descriptive Statistics for Overall Sample-Race and Graduation/Persistence

	Latino	African American	White	Asian	American Indian/ Alaska Native	Hawaiian/ Pacific Islander	Two or More Races	Unknown	Non-Resident Alien	Total
Graduated/ Persisted	226	1088	3228	134	26	2	158	80	45	4987
Not Graduated/ Persisted	29	247	375	18	6	0	23	21	13	732
										5719

Table 7 Descriptive Statistics Race and Graduation/Persistence

Table 8

Latino Respondent GPA and Pell Eligibility by Graduation or Persistence

	GPA	Pell Eligible	Not Pell Eligible
Persisters/ Graduates (n=226)	3.78	143	83
Non-Persisters (n=29)	3.77	20	9

Table 8

Latino Respondent GPA and Pell Eligibility

Exploratory Factor Analysis

Overview of the Analysis and Summary of Findings. To determine whether latent constructs exist in the 2013 UNC Sophomore Survey and, if present, what latent constructs the survey is measuring, exploratory factor analysis was applied. Specifically, the research question under examination, *Is the 2013 UNC Sophomore Survey measuring latent constructs of engagement?* To answer this question, several sub-questions must be examined including:

Is the sample matrix and identity matrix?

Is the data suited for factor analysis (is the sample adequate)?

What factors exist in the 2013 UNC Sophomore Survey?

Is the rotated factor matrix a good fit for the data?

Are the scales (or factors) valid?

Do these factors, if present, relate to a theoretical construct of engagement?

The results of the following analysis indicated that the data was appropriate for performing Exploratory Factor Analysis and that theoretically sound factors of

engagement were present in the 2013 UNC Sophomore survey. The resulting factors illustrated good data fit and validity.

Sub-research Questions One: Is the sample matrix an identity matrix? Sub-research Question Two: Is the data suited for factor analysis (is the sample adequate)?.

Bartlett's test of sphericity was applied to determine whether the sample matrix is an identity matrix. An identity matrix is a matrix when multiplied by another results in the production of the original matrix and indicates there is no correlation among the variables and that the samples have equal variance. The Kaiser-Mayer-Olkin (KMO) test measures the proportion of variance between variables that might be common. The results of this test determine whether the data is suited for factor analysis. The cut values for determining sampling adequacy are ≥0.9 (marvelous) 0.8-0.89 (meritorious), 0.79-0.60 (acceptable), 0.59-0.49 (miserable), < 0.49 (unacceptable). Table 9 below provides the results of these two tests. Results of the KMO and Bartlett's tests indicate that the null hypotheses should be rejected meaning that the matrix is not an identity matrix and there is sufficient correlation between items to support Exploratory Factor Analysis. The KMO statistic is in the marvelous range indicating the data are suited for EFA.

Table 9

Bartlett's Test of Sphericity and KMO Test of Sampling Adequacy

Research Question	Test	Null Hypothesis	Alternative Hypothesis	Bartlett's Test of Sphericity		KMO Coefficient
				x^2	df	
Is the sample matrix an identity matrix?	Bartlett's Test of Sphericity	H0= σ_1^2= σ_2^2=⋯=σ_ k^2	H1= σ_1^2≠ σ_2^2≠⋯≠σ_k^2 For at least one pair (i_j)	422764.156*	632 8	
Is the sample adequate for factor analysis?	KMO Test of sampling adequacy	H_0= KMO < 0.5	H_1= KMO > 0.5			0.942

Table 9

Bartlett's and KMO Test Table

Note: * indicates significance, p<.001

Exploratory Factor Analysis of the full set of survey items resulted in grouping of survey items by survey section on specific engagement constructs. In addition, the final factor matrices were very difficult to interpret due to multiple cross loadings and overly broad constructs. Resulting constructs from an analysis of the survey as a whole did not reveal the nuance of constructs present within the survey based on the groupings of the questions. Because of these results, exploratory factor analysis was run on each of the six sections of the survey independently to test whether the constructs would hold or whether more nuanced constructs would emerge. Through examination of the survey sections independently, a better understanding of the underlying constructs in those sections was obtained. Therefore, assumptions test were applied to each survey section separately. Results of these tests for each section of the survey are reported in Table 10 below.

Table 10
Kaiser-Mayer Olkin and Bartlett's Test of Sphericity Results by Survey Section

			Bartlett's Test of Sphericity	
Section	**Imputation**	**KMO Test Result**	x^2	**df**
Section A	Original	.937	255683.237*	6328
	1	.943	45624.622*	6328
	2	.943	456355.274*	6328
	3	.943	456367.827*	6328
	4	.943	455708.812*	6328
	5	.943	456045.162*	6328

Table 10 Kaiser-Mayer Olkin and Bartlett's Test Table
Source: Author's Analysis of 2013 UNC Sophomore Survey
Note: *denotes significance at the .001 level

Table 10 Continued
Kaiser-Mayer Olkin and Bartlett's Test of Sphericity Results by Survey Section

			Bartlett's Test of Sphericity	
Section	**Imputation**	**KMO Test Result**	x^2	**df**
Section B	Original	.941	106788.644*	351
	1	.941	129301.216*	351
	2	.941	129166.502*	351
	3	.941	129298.823*	351
	4	.941	129096.562*	351
	5	.941	129070.727*	351
Section C	Original	.850	102124.036*	325
	1	.863	121318.499*	406
	2	.863	121354.271*	406
	3	.863	121470.785*	406
	54	.863	121332.407*	406
	5	.863	121435.316*	406
Section D	Original	.762	34761.816*	66
	1	.769	39646.809*	66
	2	.768	39727.636*	66
	3	.768	39563.112*	66
	4	.768	39632.298*	66
	5	.767	39680.148*	66

Table 10 Kaiser-Mayer Olkin and Bartlett's Test Table
Note: * denotes significance at the .001 level

Table 10 Continued
Kaiser-Mayer Olkin and Bartlett's Test of Sphericity Results by Survey Section

			Bartlett's Test of Sphericity	
Section	**Imputation**	**KMO Test Result**	x^2	**df**
Section E	Original	.858	24676.620*	55
	1	.856	27730.798*	55
	2	.856	27732.325*	55
	3	.856	2732.534*	55
	4	.855	27639.117*	55
	5	.855	27785.163*	55
Section F	Original	.596	10570.050*	28
	1	.601	12179.937*	28
	2	.601	12112.457*	28
	3	.601	12039.954*	28
	4	.600	1284.820*	28
	5	.601	12070.205*	28

Table 10 Kaiser-Mayer Olkin and Bartlett's Test Table
Note: * denotes significance at the .001 level

Due to EFA being performed on each survey section separately, research sub-questions three (what factors exist in the 2013 UNC Sophomore Survey), four (Is the resulting factor matrix a good fit for the data), and five (Are the resulting factors valid) will be examined for each section of the survey. The EFA section will conclude with a discussion of the resulting constructs.

Extraction Methods

The maximum likelihood extraction and the promax rotation methods were chosen for this analysis. In order for maximum likelihood to be appropriate the data need to be approximately normally distributed. The skewness and kurtosis of survey items was examined to determine whether or not this assumption was met. The statistics for skewness and kurtosis were below the thresholds of > 2 and > 7 respectively, (Fabrigar et al, 1999). Based on the results, which are available in Appendix B along with other descriptive statistics for the survey items, maximum likelihood was determined to be the appropriate extraction method. Additionally, maximum likelihood allows for additional tests of significance and goodness of fit that is not available through other extraction methods. These tests present the researcher with additional opportunities to verify the validity of the resulting factor structure. Maximum Likelihood also seeks a solution that would best reproduce population correlation values (Bandalos & Finney, 2010).

The number of factors to extract was determined by two tests as recommended by Hair et al. (2006). Both the k1 "rule" and the scree plot were utilized to determine the number of factors to retain. Promax rotation was chosen as the method of rotation for this specific dataset due to the correlation between variables. As an oblique rotation method, promax allows for this correlation (Hair, Black, Babin, Anderson, & Tatham, 2006; Bandalos & Finney, 2010). Although this rotation method was ultimately selected, varimax rotation (an orthogonal method) was examined for comparison as suggested by Hair et al. (2006).

In order to test the robustness of the resulting factor structures, principal axis factor extraction and oblimin rotation were also conducted as comparisons to the

maximum likelihood extraction and promax rotation methods. Resulting factor structures were consistent with those found using maximum likelihood extraction and promax rotation. The consistency between these two approaches again confirms the approximate normal distribution of the survey items.

Variable Elimination

Variable elimination was based on sample size and factor pattern values. Scale items with factor pattern (or loading values) ≥ 0.32 were retained in the factor matrix. This cut-off was chosen based on the sample size and recommendations of Hair et al. (2006) and Bandalos and Finney (2010) who note that larger sample sizes (those greater than 300) can accommodate a lower factor pattern value, perhaps even as low as 0.1. Smaller sample sizes (less than 300) require factor pattern values of 0.5 or greater. Although this is a large sample (over 5,000 cases), a conservative value was selected for factor elimination to identify a simple pattern matrix consistent with theory.

The cut-off value of .32 was also utilized to interpret the pattern matrix coefficients in order to determine which variables (or survey items) load on which components (or factors). The structure matrix coefficients were examined to identify the correlation between variables and factors and were used to help interpret scale items that loaded on multiple factors. The total variance explained by each variable on each factor was also examined and assisted in the identification and definition of latent constructs underpinning factors.

Since each section of the survey was analyzed separately, the following narrative describes the decisions involved within each section of the survey. The final factor

structure and pattern matrices as well as internal validity scores are provided within these narrative descriptions.

Research Sub-Question Three: What factors exist in the 2013 UNC Sophomore Survey?.

Results for Section A: Academic Environment and Advising. After examining the scree plot and eigenvalues for section A of the survey, it was determined that 2 factors should be extracted based on the interpretation of the scree plot and Eigen value loadings (Appendix B contains all scree plots and Eigen value loadings for each section of the survey). The scree plot suggested that 3 items should be extracted, the Eigen value loadings suggested that four items should be extracted. Initially three factors were extracted and resulting in multiple high cross loadings (coefficients >.5) on the three factors. Items A3, A4, and A5 all resulted in a loading >0.32. These items were removed from the analysis and the remaining solution was re-rotated. Multiple high cross loadings (coefficients > .5 on all three factors) persisted and the extractable factors were reduced to two. The final rotated solution resulted in some double loadings however, the structure loading on one factor was above .64 and the loading on the second factor was no larger than .42. Pattern matrices achieved simple structure. Therefore, the solution with two rotated factors was retained as the final solution. Structure and Pattern Matrices are provided below in Table 11 and Table 12 respectively.

Table 11
Section A-Pooled Structure Matrix Coefficients

Item	Factor 1	Factor 2
A2e: Students at this institution are given meaningful answers to the questions they ask		0.782
A2f: Students at this institution are invited to share their ideas and knowledge		0.738
A2d: Students at this institution are encouraged to ask questions		0.733
A1a: Satisfaction with instructors' ability to motivate me to do my best		0.713
A1c: Satisfaction with how well instructors explain course material		0.702
A1g: Satisfaction with the helpfulness of instructor feedback on my work		0.699
A1b: Satisfaction with how carefully instructors explain the expectations of student performance in the course		0.688
A1d: Satisfaction with the extent to which instructors encourage class discussion		0.656
A1e: Satisfaction with how effectively instructors use instructional technology in teaching and learning activities		0.644
A2a: I consider what I've been learning in my classes valuable		0.644
A2c: I am able to freely explore academic interests at this institution		0.643
A2b: My experiences at this institution have stimulated interests in an intended field of study		0.638
A1f: Satisfaction with how quickly instructors provide feedback on my work		0.627
A6f: Satisfaction with advisor providing me information about academic courses and programs	0.892	
A6c: Satisfaction with advisor's concern with my academic success	0.876	
A6d: Satisfaction with advisor keeping me informed about my academic progress	0.857	
A6g: Satisfaction with advisor's knowledge about requirements for majors	0.846	
A6e: Satisfaction with advisor's knowledge about university rules and procedures	0.84	

Table 11 Section A Structure Matrix

Table 12

Section A Pooled Pattern Matrix Coefficients

Item	Factor 1	Factor 2
A2e: Students at this institution are given meaningful answers to the questions they ask		0.779
A2f: Students at this institution are invited to share their ideas and knowledge		0.741
A2d: Students at this institution are encouraged to ask questions		0.734
A1c: Satisfaction with how well instructors explain course material		0.71
A1a: Satisfaction with instructors' ability to motivate me to do my best		0.704
A1g: Satisfaction with the helpfulness of instructor feedback on my work		0.696
A1b: Satisfaction with how carefully instructors explain the expectations of student performance in the course		0.676
A1d: Satisfaction with the extent to which instructors encourage class discussion		0.667
A2a: I consider what I've been learning in my classes valuable		0.66
A1e: Satisfaction with how effectively instructors use instructional technology in teaching and learning activities		0.644
A1f: Satisfaction with how quickly instructors provide feedback on my work		0.626
A2b: My experiences at this institution have stimulated interests in an intended field of study		0.624
A2c: I am able to freely explore academic interests at this institution		0.617
A6f: Satisfaction with advisor providing me information about academic courses and programs	0.903	
A6c: Satisfaction with advisor's concern with my academic success	0.888	
A6d: Satisfaction with advisor keeping me informed about my academic progress	0.864	
A6g: Satisfaction with advisor's knowledge about requirements for majors	0.848	
A6e: Satisfaction with advisor's knowledge about university rules and procedures	0.831	
A6h: Satisfaction with advisor knowledge on general education and other degree requirements	0.821	

Table 12 Pattern Matrix Table

Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 12 Continued
Section A Pooled Pattern Matrix Coefficients

Item	Factor 1	Factor 2
A6a: Satisfaction with accessibility of my primary advisor	0.798	
A6i: Satisfaction with advisor knowing contacts to help me with non-academic problems	0.788	
A6b: Satisfaction with the amount of time I am given during advising sessions	0.786	
A6j: Satisfaction with advisor's encouragement of participation in educational enrichment opportunities (e.g. internships, service learning etc.)	0.779	

Table 12 Pattern Matrix Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Results for Section B: Help Outside the Classroom. To determine the number of factors to extract, the screen plot and Eigen values were examined. Eigen value coefficients suggested four factors should be retained. Scree plot examination revealed two bends in the plot. Scree plot and Eigen values often over estimate the number of predictors to retain. Therefore the percent of variance explained by the four factors with Eigen values greater or equal to one revealed that two of the factors explained together 50% of the variance and the latter two contributed very little additional explanation. For these reasons, two factors were retained. Appendix B contains all scree plots and Eigen value loadings for each section of the survey. Following rotation item B5d resulted in a loading >0.32. This item was removed from the analysis and the remaining solution was re-rotated. The final rotated solution resulted in some low double loadings for items B5e, B5f, and B5g. When examining the pattern matrix however, these items had loadings >0.32 and therefore were removed from the analysis and the remaining solution was re-rotated. This third rotation resulted in simple structure for both the structure and pattern

matrices and this solution was retained as the final solution. Structure and Pattern Matrices are provided below in Table 13 and Table 14 respectively.

Table 13
Section B Pooled Structure Matrix Coefficients

Item	Factor 1	Factor 2
B4b: Satisfaction with information on internships, co-op, & other career-related experiences	0.9254	
B4c: Satisfaction with access to employment opportunities (e.g. career fairs, etc.)	0.916	
B4d: Satisfaction with help in preparing for interviews, resumes, etc.	0.905	
B4e: Satisfaction with availability of career resources online	0.905	
B4a: Satisfaction with helpfulness of career services staff	0.844	
B5a: Satisfaction with training on the technology that I need to use	0.594	
B1b6: Satisfaction with academic assistance/tutoring services you've received for help with study skills	0.552	
B1b2: Satisfaction with academic assistance/tutoring services you've received for help with reading	0.548	
B5b: Satisfaction with assistance from the IT helpdesk in solving my technical problems	0.538	
B1b5: Satisfaction with academic assistance/tutoring services you've received for help with foreign language	0.522	
B1b3: Satisfaction with academic assistance/tutoring services you've received for help with mathematics	0.51	
B5c: Satisfaction with the hours of operation for university computer labs	0.505	
B1b1: Satisfaction with academic assistance/tutoring services you've received for help with writing	0.492	
B1b4: Satisfaction with academic assistance/tutoring services you've received for help with science	0.462	
B3e: Satisfaction with access to databases and resources		.832

Table 13 Pooled Pattern Matrix Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 13 Continued
Section B Pooled Structure Matrix Coefficients

Item	Factor 1	Factor 2
B3f: Satisfaction with access to online library resources		.832
B3b: Satisfaction with effectiveness of library resources/services in improving learning experience		.822
B3d: Satisfaction with training/instruction for using library & information resources		.698
B3b: Satisfaction with space for individual student work (library)		.695
B3a: Satisfaction with helpfulness of library staff		.684
B3c: Satisfaction with space for group work (library)		.672
B3g: Library hours of operation		.667

Table 13 Pooled Structure Matrix Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 14
Section B Pooled Pattern Matrix Coefficients

Item	Factor 1	Factor 2
B4b: Satisfaction with information on internships, co-op, & other career-related experiences	0.961	
B4c: Satisfaction with access to employment opportunities (e.g. career fairs, etc.)	0.951	
B4d: Satisfaction with help in preparing for interviews, resumes, etc.	0.934	
B4e: Satisfaction with availability of career resources online	0.933	
B4a: Satisfaction with helpfulness of career services staff	0.906	
B5a: Satisfaction with training on the technology that I need to use	0.541	
B1b2: Satisfaction with academic assistance/tutoring services you've received for help with reading	0.534	
B1b6: Satisfaction with academic assistance/tutoring services you've received for help with study skills	0.521	
B1b5: Satisfaction with academic assistance/tutoring services you've received for help with foreign language	0.503	
B5b: Satisfaction with assistance from the IT helpdesk in solving my technical problems	0.479	
B1b3: Satisfaction with academic assistance/tutoring services you've received for help with mathematics	0.475	

Table 14 Pooled Pattern Matrix Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 14 Continued
Section B Pooled Pattern Matrix Coefficients

Item	Factor 1	Factor 2
B1b1: Satisfaction with academic assistance/tutoring services you've received for help with writing	0.45	
B1b4: Satisfaction with academic assistance/tutoring services you've received for help with science	0.422	
B5c: Satisfaction with the hours of operation for university computer labs	0.41	
B3f: Satisfaction with access to online library resources		.851
B3e: Satisfaction with access to databases and resources		.849
B3h: Satisfaction with effectiveness of library resources/services in improving learning experience		.819
B3g: Library hours of operation		.668
B3b: Satisfaction with space for individual student work (library)		.683
B3c: Satisfaction with space for group work (library)		.647
B3d: Satisfaction with training/instruction for using library & information resources		.643
B3a: Satisfaction with helpfulness of library staff		.642

Table 14 Pooled Pattern Matrix Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Results for Section C: Other Offices that Serve You. After examining the scree plot and eigenvalues for section C of the survey, it was determined that 3 factors should be extracted. The scree plot indicated four factors should be retained and Eigen values indicated six factors should be retained. When examining the total variance explained by the six factors with Eigen values equal to or greater than one, the first three explained cumulative 52% of the variance and the remaining factors contributed incrementally to the overall variance explained. Appendix B contains all scree plots and Eigen value loadings for each section of the survey) and the solution was rotated. The resulting structure matrix contained dimensions whose coefficients were very similar cross loading on all three factors. Upon examination of the pattern matrix, several items had loading values below 0.32. These items included, C3a, C3c, C1m, and C2m. These items were

removed from the analysis and the remaining solution was re-rotated. The final rotated solution continued to contain multiple cross loadings in the structure matrix. However, where cross loadings were present one loading was >.52 illustrating a stronger correlation with one of the dimensions over the others. The pattern matrix achieved simple structure which contributed to the interpretation of the dimensions.

To ensure the three factor structure, two additional rotations were conducted. First, the number of factors to extract was reduced to two and the solution rotated again. The resulting structure matrix still contained double loadings and the theoretical structure of the factors was lost. Second, all items which were triple loaded in the 3 factor solution were removed and the solution rotated again. The resulting solution saw a decrease in the total variance explained by the third factor from 1.8 to 1.3 and the theoretical underpinning for the latent constructs was challenged. Therefore, the rotation with three factors, low cross loadings, and a pattern matrix that achieved simple structure was chosen for interpretation. Structure and Pattern Matrices are provided below in Table 15 and Table 16 respectively.

Table 15
Section C Pooled Structure Matrix

Item	Factor 1	Factor 2	Factor 3
C2h: Satisfaction with the quality of staff associated with the following campus offices: Housing and Residence Life	0.739		
C2i: Satisfaction with the quality of staff associated with the following campus offices: Campus Recreation	.735		
C1h: Satisfaction with the services provided by housing and residence life office	.713		

Table 15 Pooled Structure Matrix
Source: Author's Analysis of the 2013 UNC Sophomore Survey

Table 15 Continued
Section C Pooled Structure Matrix

Item	Factor 1	Factor 2	Factor 3
C1i: Satisfaction with the services provided by the campus recreation office	.712		
C2j: Satisfaction with the quality of staff associated with the following campus offices: Dining Services	.707		
C1j: Satisfaction with the services provided by the dining services office	.674		
C2k: Satisfaction with the quality of staff associated with the following campus offices: On-campus shuttle/transportation services	.658		
C1k: Satisfaction with the services provided by on-campus shuttle/transportation services office	.616		
C2f: Satisfaction with the quality of staff associated with the following campus offices: Health Services	.563		
C2l: Satisfaction with the quality of staff associated with the following campus offices: Campus Police Department	.555		
C1e: Satisfaction with the services provided by the bookstore	.547		
C1l: Satisfaction with the services provided by the campus police department	.543		
C2e: Satisfaction with the quality of staff associated with the following campus offices: Bookstore	.536		
C1f: Satisfaction with the services provided by the health services office	.521		
C2b: Satisfaction with the quality of staff associated with the following campus offices: Financial aid-disbursement process		.947	
C2a: Satisfaction with the quality of staff associated with the following campus offices: Financial aid application/award process		.946	
C1a: Satisfaction with services provided by the office of financial aid application/award process		.798	

Table 15 Structure Matrix
Source: Author's Analysis of the 2013 UNC Sophomore Survey

Table 15 Continued
Section C Pooled Structure Matrix

Item	Factor 1	Factor 2	Factor 3
C1b: Satisfaction with services provided by the office of financial aid: disbursement process		.797	
C2c: Satisfaction with the quality of staff associated with the following campus offices: Cashier/Student Accounts/Billing Office		.705	
C3b: How satisfied are you with the ease with which you can navigate through the following online services? Financial Aid		.669	
C2d: Satisfaction with the quality of staff associated with the following campus offices: Registrar's Office		.613	
C1c: Satisfaction with services provided by the cashier/student accounts/billing office		.563	
C1d: Satisfaction with the services provided by the registrar's office		.507	
C2g: Satisfaction with the quality of staff associated with the following campus offices: Counseling (personal, interpersonal, or psychological)			.922
C1g: Satisfaction with the services provided by the counseling (personal, interpersonal, or psychological) office			.905

Table 15 Pooled Structure Matrix Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 16
Section C Pooled Pattern Matrix

Item	Factor 1	Factor 2	Factor 3
C2j: Satisfaction with the quality of staff associated with the following campus offices: Dining Services	0.982		
C2i: Satisfaction with the quality of staff associated with the following campus offices: Campus Recreation	0.735		

Table 16 Pattern Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 16 Continued

Section C Pooled Pattern Matrix

Item	Factor 1	Factor 2	Factor 3
C1i: Satisfaction with the services provided by the campus recreation office	0.732		
C1h: Satisfaction with the services provided byhousing and residence life office	0.713		
C1j: Satisfaction with the services provided by the dining services office	0.713		
C2h: Satisfaction with the quality of staff associated with the following campus offices: Housing and Residence Life	0.695		
C2k: Satisfaction with the quality of staff associated with the following campus offices: On-campus shuttle/transportation services	0.656		
C1k: Satisfaction with the services provided by on-campus shuttle/transportation services office	0.612		
C2e: Satisfaction with the quality of staff associated with the following campus offices: Bookstore	0.567		
C2f: Satisfaction with the quality of staff associated with the following campus offices: Health Services	0.563		
C2l: Satisfaction with the quality of staff associated with the following campus offices: Campus Police Department	0.555		
C1l: Satisfaction with the services provided by the campus police department	0.543		
C1f: Satisfaction with the services provided by the health services office	0.521		
C1e: Satisfaction with the services provided by the bookstore	0.509		

Table 16 Pattern Matrix

Source: Author's Analysis 2013 UNC Sophomore Survey

Table 16 Continued
Section C Pooled Pattern Matrix

Item	Factor 1	Factor 2	Factor 3
C2a: Satisfaction with the quality of staff associated with the following campus offices: Financial aid application/award process		0.996	
C2b: Satisfaction with the quality of staff associated with the following campus offices: Financial aid-disbursement process		0.982	
C1a: Satisfaction with services provided by the office of financial aid application/award process		0.843	
C1b: Satisfaction with services provided by the office of financial aid: disbursement process		0.83	
C2c: Satisfaction with the quality of staff associated with the following campus offices: Cashier/Student Accounts/Billing Office		0.635	
C3b: How satisfied are you with the ease with which you can navigate through the following online services? Financial Aid		0.672	
C2d: Satisfaction with the quality of staff associated with the following campus offices: Registrar's Office		0.502	
C1c: Satisfaction with services provided by the cashier/student accounts/billing office		0.485	
C1d: Satisfaction with the services provided by the registrar's office		0.394	
C1g: Satisfaction with the services provided by the counseling (personal, interpersonal, or psychological) office			0.984
C2g: Satisfaction with the quality of staff associated with the following campus offices: Counseling (personal, interpersonal, or psychological)			0.91

Table 16 Pooled Pattern Matrix Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Results for Section D: Campus Safety. After examining the scree plot and eigenvalues for section D of the survey, it was determined that 2 factors should be extracted. Both Eigen values and the scree plot indicated two factors should be extracted. Appendix B contains all scree plots and Eigen value loadings for each section of the survey. Following rotation, both structure and pattern matrices achieved simple structure and latent constructs identified were theoretically supported. Therefore, this rotation was retained as the final solution. Structure and Pattern Matrices are provided below in Table 17 and Table 18 respectively.

Table 17
Section D Pooled Structure Matrix

Item	Factor 1	Factor 2
D1f: In general, how safe do you feel in non-residence buildings on campus at night	0.786	
D1g: In general, how safe do you feel outside on the grounds of the campus during the day/early evening	.775	
D1h: In general, how safe do you feel outside on the grounds of the campus at night	.749	
D1e: In general, how safe do you feel in non-residence buildings on campus during the day/early evening	.723	
D1d: In general, how safe do you feel using the parking lots, garages, and/or decks at night	.697	
D1c: In general, how safe do you feel using the parking lots, garages, and/or decks on campus during the day/early evening	.658	
D1b: In general, how safe do you feel in campus residence halls at night?	.623	
D2b: How satisfied are you with the availability of information about crime prevention and safety on campus		.918
D2a: How satisfied are you with the availability of public information about crimes on campus		.89

Table 17 Pooled Structure Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 18
Section D Pooled Pattern Matrix

Item	Factor 1	Factor 2
D1f: In general, how safe do you feel in non-residence buildings on campus at night	0.786	
D1a: In general, how safe do you feel in campus residence halls during the day/early evening?	.779	
D1g: In general, how safe do you feel outside on the grounds of the campus during the day/early evening	.775	
D1e: In general, how safe do you feel in non-residence buildings on campus during the day/early evening	.723	
D1d: In general, how safe do you feel using the parking lots, garages, and/or decks at night	.697	
D1c: In general, how safe do you feel using the parking lots, garages, and/or decks on campus during the day/early evening	.658	
D1b: In general, how safe do you feel in campus residence halls at night?	.623	
D1h: In general, how safe do you feel outside on the grounds of the campus at night	.749	
D2b: How satisfied are you with the availability of information about crime prevention and safety on campus		.918
D2a: How satisfied are you with the availability of public information about crimes on campus		.89

Table 18 Pooled Pattern Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Results for Section E: On-and Off Campus Activities. The scree plot generated for the analysis of Section E of the survey suggested that four factors should be extracted. The Eigenvalues suggested five factors should be extracted. Closer examination of the variance explained by each of the Eigen values greater than or equal to one revealed that only three explained the largest percentage of variance and the top two explained the majority of the variance. The remaining two explained only an incremental amount of the variance. Therefore, it was determined that three factors should be extracted. Appendix B contains all scree plots and Eigen value loadings for each section of the survey. The resulting solution contained multiple cross loadings in the structure matrix and one low

double loading (.34/.37) in the pattern matrix. Based on these results, the extractable factors were reduced to two and the solution was rotated again. The structure matrix resulted in one double loading and the pattern matrix achieved simple structure. The latent constructs identified were theoretically supported. Therefore, this rotation was retained as the final solution. Structure and Pattern Matrices are provided below in Table 19 and Table 20 respectively.

Table 19
Section E: Pooled Structure Matrix

Item	Factor 1	Factor 2
E1c: How often during the typical year do you attend or participate in each of the following campus activities?: multicultural/diversity events/programs	0.805	
E1a: How often during the typical year do you attend or participate in each of the following campus activities?: workshops, seminars, speakers etc. outside of class	0.774	
E1b: How often during the typical year do you attend or participate in each of the following campus activities?: university sponsored art events	.75	
E1d: How often during the typical year do you attend or participate in each of the following campus activities?: community service	.645	
E1f: How often during the typical year do you attend or participate in each of the following campus activities?: co-curricular activities	0.537	
E1g: How often during the typical year do you attend or participate in each of the following campus activities?: intercollegiate athletics	.404	
E1e: How often during the typical year do you attend or participate in each of the following campus activities?: Intramural activities	.043	
E2d: Please rate your overall satisfaction with opportunities on campus to develop leadership skills		.865

Table 19 Pooled Structure Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 19 Continued
Section E: Pooled Structure Matrix

Item	Factor 1	Factor 2
E2c: Please rate your overall satisfaction with the opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds		.858
E2b: Please rate your overall satisfaction with the ease with which I can get involved in campus organizations		.847
E2a: Please rate your overall satisfaction with weekend activities on campus for students		.667

Table 19 Pooled Structure Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 20
Section E: Pooled Pattern Matrix

Item	Factor 1	Factor 2
E1c: How often during the typical year do you attend or participate in each of the following campus activities?: multicultural/diversity events/programs	0.892	
E1a: How often during the typical year do you attend or participate in each of the following campus activities?: workshops, seminars, speakers etc. outside of class	0.791	
E1b: How often during the typical year do you attend or participate in each of the following campus activities?: university sponsored art events	.771	
E1d: How often during the typical year do you attend or participate in each of the following campus activities?: community service	.623	
E1f: How often during the typical year do you attend or participate in each of the following campus activities?: co-curricular activities	0.507	
E1e: How often during the typical year do you attend or participate in each of the following campus activities?: Intramural activities	.401	

Table 20 Pooled Pattern Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 20 Continued
Section E: Pooled Pattern Matrix

Item	Factor 1	Factor 2
E1g: How often during the typical year do you attend or participate in each of the following campus activities?: intercollegiate athletics	.371	
E2c: Please rate your overall satisfaction with the opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds		.858
E2d: Please rate your overall satisfaction with opportunities on campus to develop leadership skills		.849
E2b: Please rate your overall satisfaction with the ease with which I can get involved in campus organizations		.838
E2a: Please rate your overall satisfaction with weekend activities on campus for students		.667

Table 20 Pooled Pattern Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Results for Section F: Conclusions. After examining both the scree plot and Eigen values for section F of the survey, it was determined that three factors should be retained. The solution was rotated and the resulting matrix indicated that item F2 loaded below .32 and was removed. One item resulted in cross loading in the structure matrix but achieved simple structure in the pattern matrix. Therefore, this solution was retained as the final solution. Structure and Pattern Matrices are provided below in Table 21 and Table 22 respectively. Scree plots and Total Variance Explained Tables are available in Appendix C.

Table 21
Section F Pooled Structure Matrix

Item	Factor 1	Factor 2	Factor 3
F1a: I am confident that I made the right decision to attend this university	.899		
F1c: I feel I belong at this university	0.931		
F1b: I believe I was academically prepared to attend this institution	.440		
F1d: I'll have the financial resources I need to finish college	.429		
F3: While school was in session this year, about how many hours per week have you spent working for pay off campus?		-.575	
F4: How does your job affect your school work?		.818	
F5: Which of the following best describes your educational plans			.774

Table 21 Section F Pooled Structure Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 22
Section F Pooled Pattern Matrix

Item	Factor 1	Factor 2	Factor 3
F1a: I am confident that I made the right decision to attend this university	.901		
F1b: I believe I was academically prepared to attend this institution	.426		
F1c: I feel I belong at this university	.931		
F1d: I'll have the financial resources I need to finish college	.425		
F3: While school was in session this year, about how many hours per week have you spent working for pay off campus?		-.668	
F4: How does your job affect your school work?		.715	
F5: Which of the following best describes your educational plans			.819

Table 22 Section F Pooled Pattern Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Sub-research Question Four: Is the rotated factor matrix a good fit for the data?. In order to ensure the final rotate factor solution was a good fit for the data, the x^2Goodness of Fit text was applied. In the case of Exploratory Factor Analysis, the goodness of fit tests the null hypothesis that there are no common factors within the data. Each section of the survey was tested separately and resulted in a rejection of the null hypothesis that there are no common factors in the data. Table 23 summarizes the results for each survey section.

Table 23

x^2Goodness of Fit Test Results

Research Question	Null Hypothesis	Alternative Hypothesis
Is the final rotated factor matrix a good fit for the data?	h_0: no common factors	h_1: at least two common factors
Survey Section	x^2	df
A	8994.6916*	208
B	24707.3116*	188
C	26227.262*	133
D	10583.5828*	26
E	1954.737*	34
F	54.78733*	7

Table 23 x^2 Goodness of Fit Table

Note: * denotes significance at the .001 level

Sub-research Question Five: Are the scales (or factors) valid?. After each factor structure was achieved, internal consistency was examined for the remaining survey items in each section of the survey through the calculation of Cronbach Alpha scores. Sections A through D had high internal consistency scores ranging from .841 to

.944. Sections E and F has low internal consistency scores (.542 and .547 on standardized items respectively). Cronbach Alpha scores are presented in Table 24.

Items in sections E and F of the survey were re-examined to determine whether there may be any relationship between these sections of the survey. Each of the previous sections contains questions focused on a specific area of the university experience or environment. Sections E and F are not as topically targeted and, upon closer examination, have survey items that are theoretically related. Due to the relationship between the items in these sections of the survey, the items were examined together using Exploratory Factor Analysis.

Table 24
Internal Consistency Scores by Survey Section

Section	Cronbach's Alpha	Cronbach's Alpha Based on Standardized items	N of Items
A Original	.944	.944	23
A Pooled	.943	.942	23
B Original	.934	.933	23
B Pooled	.933	.931	23
C Original	.917	.917	22
C Pooled	.915	.917	22
D Original	.872	.874	10
D Pooled	.873	.874	10
E Original	.827	.844	11
E Pooled	.824	.841	11
F Original	.330	.542	7
F Pooled	.342	.549	7

Table 24 Cronbach Alpha Scores Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Examination of Sections E& F. Prior to running the exploratory factor analysis, the same assumption tests were applied as to the previous sections of the survey.

Bartlett's test of sphericity resulted in the rejection of the null hypothesis that the sample matrix is an identity matrix ($x^2\ (171) = 40775.538, p < .001$) indicating that there are appropriate correlations in the data to support exploratory factor analysis. In addition, the Kaiser-Mayer-Olkin (KMO) test resulted in a meritorious range (.820). Taken together the results of these tests indicate the data is suited for EFA. The full results of these tests are provided in Table 25.

Table 25
Bartlett's Test of Sphericity and KMO Test of Sampling Adequacy Sections E&F Combined

						Bartlett's Test of Sphericity	
Section	**Research Question**	**Test**	**Null Hypothesis**	**Alternative Hypothesis**	**KMO Coefficient**	x^2	**df**
Sections E & F	Is the sample matrix an identity matrix?	Bartlett's Test of Sphericity	H_0= σ_1^2= σ_2^2=⋯= σ_k^2	H_1= σ_1^2≠ σ_2^2≠⋯≠σ _k^2 For at least one pair (i_j)		40775.538*	171
	Is the sample adequate for factor analysis?	KMO Test of sampling adequacy	H_0= KMO < 0.5	H_1= KMO > 0.5	.820		

Table 25
Bartlett's Test of Sphericity and KMO Test of Sampling Adequacy
Note: * denotes significance at the .00 level

After examining the scree plot and eigenvalues for sections E and F of the survey, it was determined that 3 factors should be extracted. The scree plot indicated that three factors should be extracted and the Eigen value examination revealed that three factors should be extracted. Appendix B contains all scree plots and Eigen value loadings for each section of the survey. Item F2, F3, F4, and F5 resulted in loadings less than 0.32. These items were removed from the analysis and the remaining solution

was re-rotated. The final rotated solution resulted in some cross loadings however, the pattern matrix achieved simple structure. Therefore, this solution was retained as the final solution. Structure and Pattern Matrices are provided below in Table 26 and Table 27 respectively.

Table 26
Sections E&F Pooled Structure Matrix

Item	Factor 1	Factor 2	Factor 3
E1c: How often during the typical year do you attend or participate in each of the following campus activities?: multicultural/diversity events/programs	.806		
E1a: How often during the typical year do you attend or participate in each of the following campus activities?: workshops, seminars, speakers etc. outside of class	.773		
E1b: How often during the typical year do you attend or participate in each of the following campus activities?: university sponsored art events	.75		
E1d: How often during the typical year do you attend or participate in each of the following campus activities?: community service	.645		
E1f: How often during the typical year do you attend or participate in each of the following campus activities?: co-curricular activities	.537		
E1e: How often during the typical year do you attend or participate in each of the following campus activities?: Intramural activities	.434		
E1g: How often during the typical year do you attend or participate in each of the following campus activities?: intercollegiate athletics	.404		
E2d: Please rate your overall satisfaction with opportunities on campus to develop leadership skills		.866	

Table 26 Structure Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 26 Continued
Sections E&F Pooled Structure Matrix

Item	Factor 1	Factor 2	Factor 3
E2c: Please rate your overall satisfaction with the opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds		.859	
E2b: Please rate your overall satisfaction with the ease with which I can get involved in campus organizations		.845	
E2a: Please rate your overall satisfaction with weekend activities on campus for students		.667	
F1c: I feel I belong at this university			.936
F1a: I am confident that I made the right decision to attend this university			.896
F1b: I believe I was academically prepared to attend this institution			.437
F1d: I'll have the financial resources I need to finish college			.431

Table 26 Pooled Structure Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 27
Sections E&F Pooled Pattern Matrix

Item	Factor 1	Factor 2	Factor 3
E1c: How often during the typical year do you attend or participate in each of the following campus activities?: multicultural/diversity events/programs	..827		
E1a: How often during the typical year do you attend or participate in each of the following campus activities?: workshops, seminars, speakers etc. outside of class	.792		
E1b: How often during the typical year do you attend or participate in each of the following campus activities?: university sponsored art events	.771		
E1d: How often during the typical year do you attend or participate in each of the following campus activities?: community service	.623		

Table 27 Pattern Matrix
Source: Author's Analysis 2013 UNC Sophomore Survey

Table 27 Continued
Sections E&F Pooled Pattern Matrix

Item	Factor 1	Factor 2	Factor 3
E1f: How often during the typical year do you attend or participate in each of the following campus activities?: co-curricular activities	.51		
E1e: How often during the typical year do you attend or participate in each of the following campus activities?: Intramural activities	.402		
E1g: How often during the typical year do you attend or participate in each of the following campus activities?: intercollegiate athletics	.375		
E2c: Please rate your overall satisfaction with the opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds		.872	
E2d: Please rate your overall satisfaction with opportunities on campus to develop leadership skills		.844	
E2b: Please rate your overall satisfaction with the ease with which I can get involved in campus organizations		.822	
E2a: Please rate your overall satisfaction with weekend activities on campus for students		.641	
F1c: I feel I belong at this university			.949
F1a: I am confident that I made the right decision to attend this university			.896
F1b: I believe I was academically prepared to attend this institution			.422
F1d: I'll have the financial resources I need to finish college			.376

Table 27 Pooled Pattern Matrix
Source: Author's Analysis of 2013 UNC Sophomore Survey

Goodness of Fit for Sections E and F. In order to ensure the final rotate factor solution was a good fit for the data, the $\boldsymbol{x^2}$ Goodness of Fit text was applied. Again, this analysis tests the null hypothesis that there are no common factors in the data against the

alternative hypothesis that there are at least two common variables. Table 28 summarizes the results for each survey section.

Table 28

x^2Goodness of Fit Test Results

Research Question	Null Hypothesis	Alternative Hypothesis
Is the final rotated factor matrix a good fit for the data?	h_0: no common factors	h_1: at least two common factors
Survey Section	x^2	df
E&F	2223.442*	63

Table 28
x^2 Goodness of Fit Table
Note: * denotes significance at the .001 level

Internal Consistency for Sections E and F. After achieving a factor structure, internal consistency was examined for the through the calculation of Cronbach Alpha scores. The internal consistency score increased to .842 from the score of .542 for Section E and .547 for Section indicating a stronger level of internal validity. Cronbach Alpha scores are presented in Table 29.

Table 29
Pooled Internal Consistency Scores for Sections E & F

Section	Cronbach's Alpha	Cronbach's Alpha Based on Standardized items	N of Items
E&F	.825	.842	15

Table 29 Pooled Internal Consistency Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Appendix D contains a listing of all survey items, by section, that were eliminated from the factor solution based on the examination of the coefficients following

rotation(s). Appendix E reports the communalities for each of the final factor structures by section.

Sub-Research Question Six: Do these factors, if present, relate to a theoretical construct of engagement.

Factor Descriptions. The final factor rotations were examined using both structure and pattern matrix loadings as well as variances to determine the theoretical underlying constructs present among the survey items. The interpretation of the factors is driven by theories of student engagement, involvement, and sense of belonging as well as the structure of the National Survey of Student Engagement (NSSE). The loading of survey items was aligned with these theories and the NSSE. Two surprising outcomes of the factor structures were the loss of so many co-curricular and peer-engagement survey items which seemed to be closely aligned with engagement and involvement. Secondly, no specific construct of academic support emerged despite the large number of specific constructs covering this area. The following identifies the constructs for each factor by section as well as the survey items loading on that factor/construct. Additional interpretation of these constructs will be provided in Chapter five.

Section A. Theoretical Title for Factor 1: Satisfaction with Advising Relationship This construct measures student's satisfaction level with their advising relationship. Each question highlights a different aspect of the relationship between students and advisors. One aspect of engagement is the experience students have with faculty, staff, and administrators. Advisors are a key member of the campus community and one of the first individuals on campus a student will interact with. That interaction either illustrates a

supportive campus environment or that the campus is not supportive (Carini, Kuh, Klein, 2006).

1. A6a: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Accessibility of my primary advisor

2. A6b: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance. Amount of time I am given during advising sessions

3. A6c: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor's concern with my academic success

4. A6d: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor keeping me informed about my academic progress

5. A6e: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor's knowledge about university rules and procedures

6. A6f: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor providing me with the information I need about academic courses and programs

7. A6g: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor's knowledge about the requirements for my current major or major of interest

8. A6h: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor's knowledge about general education and other degree requirements

9. A6i: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor knowing whom to contact to help me with non-academic problems

10. A6j: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor's encouragement of participation in educational enrichment opportunities (e.g. internship, service learning, clubs related to my major)

Theoretical Title for Factor 2: Satisfaction with Classroom Experience

Questions included in this factor measure student's satisfaction level with their classroom experience and interaction with faculty and instructors. As previous literature has illustrated (Carinia, Kuh, Klein, 2006; Crisp, Taggart, and Nora, 2014) relationships with faculty and instructors have been categorized as engagement constructs and linked to desirable academic outcomes.

Survey Items

11. A1a: Please rate your overall satisfaction with instructors on your campus for each of the following: Their ability to motivate me to do my best
12. A1b: Please rate your overall satisfaction with instructors on your campus for each of the following: How carefully they explain the expectations of student performance in the course
13. A1c: Please rate your overall satisfaction with instructors on your campus for each of the following: How well they explain course material
14. A1d: Please rate your overall satisfaction with instructors on your campus for each of the following: The extent to which they encourage class discussion
15. A1f: Please rate your overall satisfaction with instructors on your campus for each of the following: How quickly they provide feedback on my work
16. A1g: Please rate your overall satisfaction with instructors on your campus for each of the following: The helpfulness of their feedback on my work
17. A2a: Please rate the extent to which you agree or disagree with each of the following: I consider what I have been learning in my classes valuable
18. A2b: Please rate the extent to which you agree or disagree with each of the following: My experiences at this institution have stimulated interest in an intended field of study
19. A2c: Please rate the extent to which you agree or disagree with each of the following: I am able to freely explore academic interests at this institution

20. A2d: Please rate the extent to which you agree or disagree with each of the following: Students at this institution are encouraged to ask questions

21. A2e: Please rate the extent to which you agree or disagree with each of the following: Students at this institution are given meaningful answers to the questions they ask

22. A2f: Please rate the extent to which you agree or disagree with each of the following: At this institution, students are invited to share their ideas and knowledge

Section B. Theoretical Title for Factor 1: Satisfaction with Campus Support for Student Success

This construct measures student's satisfaction with services and offices that support their academic success. Similar to satisfaction with advising relationship, this construct illustrates a student's perception of a supportive campus environment which has been utilized as an engagement construct in other measures of student engagement. Specifically this measure is exploring a student's perception of academic support and may indicate whether or not a student feels they belong academically at the institution.

Survey Items

1. B4b: Please rate your satisfaction with each of the following: Career Services-Information on internships, co-ops, and other career-related experiences

2. B4c: Please rate your satisfaction with each of the following: Career Services-Access to employment opportunities (e.g., career fairs, interviews, job listings, etc.)

3. B4e: Please rate your satisfaction with each of the following: Career Services-Availability of career resources online

4. B4d: Please rate your satisfaction with each of the following: Career Services-Help in preparing for interviews, resumes, etc.

5. B4a: Please rate your satisfaction with each of the following: Career Services-Helpfulness of Staff

6. B5a: Please rate your satisfaction with each of the following: Information Technology Services-Training on the technology that I need to use

7. B1b6: Please rate your satisfaction with each of the following: Academic assistance or tutoring services you have received on campus for help with study skills

8. B1b2: Please rate your satisfaction with each of the following: Academic assistance or tutoring services you have received on campus for help with reading

9. B4b: Please rate your satisfaction with each of the following: Information Technology Services: Assistance from the helpdesk in solving my technology problems

10. B1b5: Please rate your satisfaction with each of the following: Academic assistance or tutoring services you have received on campus for help with foreign language

11. B1b3: Please rate your satisfaction with each of the following: Academic assistance or tutoring services you have received on campus for help with mathematics

12. B5c: Please rate your satisfaction with each of the following: Information Technology Services: Hours of operation for university computer labs

13. B1b1: Please rate your satisfaction with each of the following: Academic assistance or tutoring services you have received on campus for help with writing

Theoretical Title for Factor 2: Satisfaction with Library Academic Support

Engagement has been defined as academically meaningful activities including studying and research. This construct measures student's satisfaction with the services and support offered through the Library. Utilizing the library is a demonstration of engagement in meaningful academic activity.

1. B3h: Please rate your satisfaction with each of the following: Library-Effectiveness of library services in improving my learning experiences

2. B3e: Please rate your satisfaction with each of the following: Library-Access to databases and resources

3. B3f: Please rate your satisfaction with each of the following: Library-Access to online library resources

4. B3d: Please rate your satisfaction with each of the following: Library-Training/instruction for using library and information resources

5. B3b: Please rate your satisfaction with each of the following: Library- Space for individual student work

6. B3a: Please rate your satisfaction with each of the following: Library-Helpfulness of staff

7. B3c: Please rate your satisfaction with each of the following: Library-Space for group work

8. B3g: Please rate your satisfaction with each of the following: Library-Hours of operation

Section C. Theoretical Title for Factor 1: Satisfaction with Campus Environment

One of the concepts of engagement is having relationships with key faculty and staff. The questions in this construct explore whether students are satisfied with these interactions or relationships indicating whether or not they see the campus as a supportive environment.

Survey Items:

1. C2h: Please rate the quality of the staff associated with the following campus offices: Housing and Residence Life.

2. C2i: Please rate the quality of the staff associated with the following campus offices: Campus Recreation

3. C1i: Please rate your satisfaction with the services provided by the following offices on campus: Campus Recreation

4. C2j: Please rate the quality of the staff associated with the following campus offices: Dining Services

5. C1h: Please rate your satisfaction with the services provided by the following offices on campus: Housing and Residence Life.

6. C1j: Please rate your satisfaction with the services provided by the following offices on campus: Dining Services

7. C2k: Please rate the quality of the staff associated with the following campus offices: On-campus shuttle/transportation services

8. C1k: Please rate your satisfaction with the services provided by the following offices on campus: On-campus shuttle/transportation services

9. C2e: Please rate the quality of the staff associated with the following campus offices: Bookstore

10. C1e: Please rate your satisfaction with the services provided by the following offices on campus: Bookstore

Theoretical Title for Factor 2: Satisfaction with Financial Guidance

These questions measure student satisfaction with the quality of staff and services in areas on campus dealing with financial matters such as financial aid, registrar, and bursar's offices. They explore student experience and satisfaction with the guidance received. Experiences and satisfaction levels illustrate whether or not students have had positive or negative interaction with integral staff on campus. The type of interaction experienced relates to how and whether a student engages with the institution and affects their sense of belonging.

Survey Items

1. C2b: Please rate the quality of the staff associated with the following campus offices: Financial Aid: Disbursement process

2. C2a: Please rate the quality of the staff associated with the following campus offices: Financial Aid: Application/award process

3. C1a: Please rate your satisfaction with the services provided by the following offices on campus: Financial Aid: Application/award process

4. C1b: Please rate your satisfaction with the services provided by the following offices on campus: Financial Aid: Disbursement process

5. C2c: Please rate the quality of the staff associated with the following campus offices: Cashier/Student Accounts/Billing Office

6. C2d: Please rate the quality of the staff associated with the following campus offices: Registrar's Office

7. C1c: Please rate your satisfaction with the services provided by the following offices on campus: Cashier/Student Accounts/Billing Office

8. C1d: Please rate your satisfaction with the services provided by the following offices on campus: Registrar's Office

Theoretical Title for Factor 3: Satisfaction with Mental Health Support

Questions in this construct explore student satisfaction with counseling services and mental health support. Ratings on these questions indicate students have utilized these services.

Survey Items:

1. 2Cg: Please rate the quality of the staff associated with the following campus offices: Counseling (personal, interpersonal, or psychological)

2. 1Cg: Please rate the services provided by the following offices on campus: Counseling (personal, interpersonal, or psychological)

Section D. Theoretical Title for Factor 1: Perception of Safety

These questions explore the extent to which students feel safe on campus. The perception of safety can affect student decisions to engage with the campus community.

Survey Items:

11. D1f: In general, how safe do you feel in non-residence hall buildings on campus at night? (e.g., classrooms, libraries, etc.)

12. D1g: In general, how safe do you feel outside on the grounds of the campus during the day/early evening?

13. D1h: In general, how safe do you feel outside on the grounds of the campus at night?

14. D1e: In general, how safe do you feel in non-residence hall buildings on campus during the day/early evening? (e.g. classrooms, libraries, etc.)

15. D1d: In general, how safe do you feel using the parking lots, garages, and/or decks on campus at night?

16. D1c: In general, how safe do you feel using the parking lots, garages, and/or decks on campus during the day/early evening?

17. D1b: In general, how safe do you feel in campus residence halls at night?

Theoretical Title for Factor 2: Perception of Crime

These questions explore the extent to which students feel they have the information necessary to be aware of and potentially prevent crime. These questions provide a sense of the student's perception of how much crime is taking place on campus.

Survey Items

9. D2b: How satisfied are you with the availability of information about crime prevention and safety on campus?

10. D2a: How satisfied are you with the availability of public information about crimes on campus?

Section E and F. Theoretical Title for Factor 1: Co-curricular Engagement

Questions making up this construct explore the frequency that students are participating in co-curricular events. These questions are more reflective of traditional engagement which focuses on time and effort devoted to academically meaningful activities.

Survey Items:

18. E1c: About how often during the typical year do you attend or participate in each of the following campus activities?: Multicultural/diversity events/programs

19. E1a: About how often during the typical year do you attend or participate in each of the following campus activities?: Workshops, seminars, speakers, etc. outside of class

20. E1b: About how often during the typical year do you attend or participate in each of the following campus activities? University sponsored art events (e.g. plays, musical performances, exhibits)

21. E1d: About how often during the typical year do you attend or participate in each of the following campus activities? Community service/volunteer work

22. E1f: About how often during the typical year do you attend or participate in each of the following campus activities? Co-curricular activities (e.g. University-sponsored student organizations, student government, Greek Life)

23. E1e: About how often during the typical year do you attend or participate in each of the following campus activities? Intramural activities (including club and recreational sports)

24. E1g: About how often during the typical year do you attend or participate in each of the following campus activities? Intercollegiate athletic events

Theoretical Title for Factor 2: Satisfaction with Peer Engagement

Each of the questions in this construct explores students' relationships with their peers both in co-curricular and extra-curricular settings and whether they are satisfied with the opportunities to interact with peers. This construct is a more traditional form of engagement.

Survey Items

11. E2c: Please rate your overall satisfaction with opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds

12. E2d: Please rate your overall satisfaction with opportunities on campus to develop leadership skills

13. E2b: Please rate your overall satisfaction with the ease with which I can get involved in campus organizations

14. E2a: Please rate your overall satisfaction with weekend activities on campus for students

Theoretical Title for Factor 3: Sense of Belonging

This construct represents the concept of sense of belonging as defined and tested by Hurtado and Carter (1997). Her scale includes questions similar to those included in this construct including, "I feel a sense of belonging at this campus", "I see myself as part of the campus community", "I feel I am a member of this college" (Hurtado, Alvarado, & Guillermo-Wan, 2012). The questions from the 2013 UNC Sophomore survey loading on this factor are worded very similarly to the questions in Hurtado et al.'s (2012) construct. The two questions related to academic preparedness and financial resources conceptually and theoretically make sense as a student may question their belonging if they feel they are not academically prepared or financial able to continue study particularly if they feel their peers are academically prepared and have adequate financial resources.

Survey Items

1. F1c: To what extent do you agree or disagree with each of the following? I feel I belong at this institution
2. F1a: To what extent do you agree or disagree with each of the following? I am confident that I made the right decision to attend this university
3. F1b: I believe I am academically prepared to attend this institution
4. F1d: To what extent do you agree or disagree with each of the following: I will have the financial resources I need to finish college.

Sub-research question seven: Are there statistically significant differences between engagement factor scores of Latino and White respondents?

Critical quantitative theorists encourage the examination of underrepresented groups individually versus using race as a categorical variable within the model (Stage, 2007). To support the decision to run separate models for racial categories, independent

sample t-tests were applied to each factor score to determine whether there was a statistically significant difference in the mean scores of white and Latino respondents. The null hypothesis to be tested is that the means of the two samples are equal ($\mu_1 - \mu_2 = d$). Of the twelve factors, six resulted in statistically significant results. The factors which had statistically significantly different means between Latino and White respondents were, Satisfaction with Classroom Experience, Satisfaction with Campus Support Services, Satisfaction with Library Academic Support, Satisfaction with Financial Guidance, Co-Curricular Engagement, & Peer Engagement. Due to the large sample size the significance present in these t-tests is not surprising however, the significance is not arbitrary. Prior research supports the statistically significant difference between White and Latino respondents in these areas. As previously discussed Latino students are often the first in their families to attend college, come from lower socio-economic backgrounds, have lower levels of academic preparation and academic self-efficacy, and have different ways they engage with peers and the institution overall. These areas of significance demonstrate a cohesive narrative with the findings from this research. Table 30 summarizes these findings.

Table 30

Independent Samples T-Test Pooled Results

Factor Name	df	t	Sig (2-tailed)		Mean	SE	SD
Satisfaction w/Classroom Environment	3856	2.772	<.05	Latino	0.041	0.015	.897
				White	0.202	0.056	.905
Satisfaction with Support Services	3856	1.926	0.05	Latino	0.043	0.063	1.00
				White	-0.082	0.017	.993
Satisfaction with Library Academic Support	3856	2.046	<.05	Latino	0.249	0.062	.984
				White	0.001	0.015	.921
Satisfaction with Financial Guidance	3856	4.978	<.001	Latino	0.243	0.061	.940
				White	-0.094	0.017	1.02
Co-curricular Engagement	3856	4.047	<.001	Latino	0.141	0.056	.901
				White	-0.089	0.015	.871
Peer Engagement	3856	2.661	<.01	Latino	0.213	0.059	.931
				White	0.053	0.015	.912

Table 30

Independent Samples T-Test Results

Although there were not a statistically significant difference in scores on the factor score Sense of Belonging and Satisfaction with Advising Relationship, those constructs which did have significantly significant differences are theoretically linked to engagement. Although many of these constructs are satisfaction based, there is literature to support the linkage of student satisfaction and engagement (Fisher, 2007). Based on these findings, the theoretical and literature linkages, there is evidence to suggest that there are differences in engagement among Latino students that support investigating Latino respondents within discrete models.

Logistic Regression

Determining which latent variables are most predictive of a Latino student graduating or persisting through spring 2016, and how these latent variables may differ among other racial groups requires the application of logistic regression. Logistic regression is the best methodology to apply to the research questions in this study due to the dichotomous dependent variable. Logistic regression will provide statistics related to model fit and measurements of association between the dependent and independent variables of interest.

The dependent variable in this study is whether a student has persisted (meaning they were still enrolled) or graduated by spring 2016. Persistence is being included in this model in addition to graduation for several reasons. The first is that the standard metric for graduation rate is 6 years. At the time respondents participated in this survey (spring 2013) they were considered sophomores and therefore would have had at least two more years (or four semesters) of coursework before they were eligible for graduation. This means the earliest date of eligibility would have been spring of 2015. However, there would be one year remaining before the six-year graduation metric had been reached. Therefore, graduate status through spring 2016 was included. Additionally, students who had not graduated, but remained enrolled and were persisting through spring 2016 were also included. As was previously discussed, many Latino students go to school less than full time and therefore could have a longer time to degree. It is important to understand, the characteristics of the students who continue to persist despite these challenges.

The following research questions will be examined:

- *Is there a relationship (and to what extent) between constructs of engagement, Pell eligibility, and academic preparation on graduation or retention for different racial/ethnic groups?*

The sub-questions used to answer this research question were:

- *Which set of independent variables (the baseline model, full model, or reduced model) best predicts likelihood to graduate or persist for Latinos, Whites, and African Americans?*
- *Which independent variables have the greatest relationship with the probability to graduate or persist for Latinos, Whites, and African Americans?*
- *Are the models good fits for the data?*
- *How are the effect sizes of the independent variables for Latinos, Whites, and African Americans related?*

The purpose of this study is to examine the extent to which variables related to Pell eligibility, academic preparation, and engagement constructs are related to completing a baccalaureate degree at a four-year public university, which variables or combination of variables are more highly correlated with completion, and how those variables change based on respondents race. Table 31 organizes specific research questions by method and hypothesis to be applied to each sample independently.

Table 31
Research Questions and Methodology

Research Question	Method	Null Hypothesis	Alternative Hypothesis
Does the base model predict completion better than the null model?	Omnibus Test of the Model Coefficients	$H_{0=}\beta_1 = \beta_2 = \beta_{3\ldots}\beta_k$	H_1: $\beta_j \neq \beta_i$ for at least one pair
Does the full model predict completion better than the null and baseline models	Omnibus Test of the Model Coefficients	$H_{0=}\beta_1 = \beta_2 = \beta_{3\ldots}\beta_k$	H_1: $\beta_j \neq \beta_i$ for at least one pair
Does the full model predict completion better than the reduced model	Omnibus Test of the Model Coefficients	$H_{0=}\beta_1 = \beta_2 = \beta_{3\ldots}\beta_k$	H_1: $\beta_j \neq \beta_i$ for at least one pair
Are the models good fits for the observed data?	Hosmer Lemeshow Test	H_0: $-2LL_{\text{null model}} = -2LL_{\text{proposed}}$	H_1= $-2LL_{\text{null model}} \neq -2LL_{\text{proposed model}}$
Are the coefficients for each predictor variable in the model statistically significant	Wald Test Statistic	H_0: $\beta_j = 0$	H_1: $\beta_j \neq 0$
Which variables have the largest effect size?	Odds Ratio	H_0: $OR = 1$	H_1: $OR \neq 1$
What is the relationship in effect sizes of independent variables between Latinos, African Americans and Whites?	Standardized Wald Test Standardized and Odds Ratios t-Test of Standardized Slopes	H_0: $\beta_j = 0$ H_0: $r_{x_1} = r_{x_2} = r_{x_3} \ldots r_{x_k}$	H_1: $\beta_j \neq 0$ H_1: $r_{x_1} \neq r_{x_2} \neq r_{x_3} \neq \cdots r_{x_k}$

Table 31
Research Questions Table

The decision to examine separate models by respondent's race has already been discussed and justified. Based on the results of the power analysis (results reported in chapter three), several racial/ethnic groups had too few respondents to support logistic regression. These include, Asians (n= 152), Native American/Alaska Natives (n= 32), and Hawaiian/Pacific Islander (n= 2), Non-Resident Alien (n=58), and Two or More Races (n=181). The final category, Unknown (n=101) was removed from analysis due to the inability to theoretically link the respondents racial/ethnicity and cultural background to the regression results. The phenomena under investigation in this study is directly tied to the respondents race and ethnicity and therefore that information is necessary to answer the research question. The remaining categories, Latino (n=255), African American (n=1335) and White (n=3603) will be used for analysis.

Prior to analysis correlations between the factor scores and the other independent variables, academic preparation and Pell eligibility were examined. The results of this test are provided in Appendix F.

Research Sub-question One: Is the model a significant predictor of the likelihood to graduate or persist for Latinos, Whites, and African Americans. The first research question is whether the reduced model is a better predictor of the outcome variable than the null model. For each model tested (Latinos, Whites, and African Americans) the reduced model was a better predictor of persistence/retention than the null model. The reduced model to be tested is $\ln(\frac{\hat{p}}{1-\hat{p}}) = \beta_1 X_1 + \beta_2 X_2 + \beta_0$ where X_1= High School GPA (proxy for Academic Preparation), X_2= Pell Recipient Status (categorical variable indicating whether or not a student ever received a Pell grant). This model serves as a baseline model for all racial/ethnic groups as prior research has found

that socio-economic status and high school preparation are correlated with student persistence and graduation. The null hypothesis to be tested is that there is no difference in prediction between the null and baseline models, $H_{0=}\ \beta_1 = \beta_2 = \beta_{3\ldots}\beta_k$. The alternative hypothesis is that there is a difference between the two models, H_1: $\beta_j \neq \beta_i$ for at least one pair. Table 32 summarizes the results of the omnibus of model coefficients test results by race.

Table 32
Omnibus Test of the Coefficient Pooled Results by Race for the Reduced Model

Race/Ethnicity	N	x^2	df	Nagelkerke R^2	Cox and Snell R^2
Latino	255	7.15*	2	.14	.027
African American	1335	23.3152**	2	.028	.017
White	3603	45.439*	2	.021	.009

Table 32
Ominbus Test Table
Note: * indicates significance at the .05 level ** indicates significance at the .01 level

The Omnibus of Model Coefficients confirms that each of the reduced models are statistically significantly better predictors of the outcome variable than the null model. The Nagelkerke R^2 values, indicate weak relationships between the predictors in the models and the outcome variable. The Cox and Snell R^2 values indicate that the model for Latinos explains 2.7% of the variance in the dependent variable, the model for African American's explains 1.7% of the variance in the dependent variable, and the model for Whites explains .09% of the variance in the dependent variable.

The second model to be tested is the full model, $\ln(\frac{\hat{p}}{1-\hat{p}}) = \beta_1 X_1 + \beta_2 X_2 +$

$\beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} +$

$\beta_{13}X_{13} + \beta_{14}X_{14} + \beta_0$ where X_1= High School GPA, X_2= Pell Recipient Status, X_3= Factor Score, Satisfaction with Advising, X_4= Factor Score, Satisfaction with Classroom Experience, X_5= Factor Score, Satisfaction with Support Services, X_6= Satisfaction with Library Academic Support, X_7= Satisfaction with Campus Environment, X_8= Satisfaction with Financial Guidance, X_9= Satisfaction with Mental Health Support, X_{10}= Perception of Safety, X_{11}= Perception of Crime, X_{12}= Co-Curricular Engagement, X_{13}= Peer Engagement, X_{14}= Sense of Belonging. The null hypothesis to be tested is that there is no difference in prediction between the null and full models, $H_{0=}\beta_1 = \beta_2 = \beta_{3\ldots}\beta_k$. The alternative hypothesis is that there is a difference between the two models, H_1: $\beta_j \neq \beta_i$ for at least one pair. The Omnibus of Model Coefficients confirms that the full models for Latinos, African Americans, and Whites are all statistically significantly better predictors of the outcome variable than the null models.

The Nagelkerke R^2 values, indicate weak relationships between the predictors in the models and the outcome variable. The Cox and Snell R^2 values indicate that the model for Latinos explains 12% of the variance in the dependent variable, the model for African American's explains 4% of the variance in the dependent variable, and the model for Whites explains 3.4% of the variance in the dependent variable.

Table 33 summarizes the results of the omnibus of model coefficients test results by race and model type.

Table 33
Omnibus Test of the Coefficient Pooled Results by Race for the Full Model

Model	Race/ Ethnicity	N	x^2	df	Nagelkerke R^2	Cox and Snell R^2
Null versus Full Model	Latino	255	38.417**	14	0.242	0.12
	African American	1335	59.928**	14	0.071	0.04
	White	3603	124.939***	14	0.07	0.034

Table 33
Ominbus Test Table
Note: * indicates significance at the .05 level ** indicates significance at the .01 level *** indicates significance at the .001 level

Research Sub-question Two: Are the models good fits for the observed data?.

The Hosmer Lemeshow tests for each of the models confirm that the data are good fits for each of the three models. Results of the Hosmer Lemeshow test are provided in Table 34.

Table 34
Hosmer-Lemeshow Pooled Results by Race

Model	Race/Ethnicity	N	HLx^2	df	2LL
Reduced Model	Latino	255	9.099	8	172.631
	African American	1335	6.633	8	1252.61
	White	3603	10.937	8	2367.91
Full Model	Latino	255	9.092	8	146.493
	African American	1335	7.915	8	1215.99
	White	3603	6.094	8	2279.64

Table 34
Hosmer Lemshow Test Table

Finally, in order to test whether the reduced or full models were better predictors of the outcome variable, the change between the 2LL coefficients were compared. This comparison revealed that the full model was a better predictor of the outcome variable than the reduced model for Latino respondents. Reduced models were better predictors of the outcome variable over the full model for African Americans and White students. Table 35 summarizes the outcome of this test.

Table 35
Test of Δ *LL* Results by Race

Model	Race/Ethnicity	N	2LL	df
Full versus Reduced Model	Latino	255	21.04*	12
	African American	1335	14.61	12
	White	3603	12.04	12

Table 35 Test of Δ *LL*
Note *denotes significance at .05 level

Research Sub-question Three: Which independent variables are the best predictors of the likelihood to graduate or persist for Latinos, Whites, and African Americans and what are the effect sizes of these variables? Summary results of the independent variables in the reduced model for $(\ln(\frac{\hat{p}}{1-\hat{p}}) = \beta_1 X_1 + \beta_2 X_2 + \beta_0$ where X_1= Academic Preparation, X_2= Pell Recipient Status) by race are provided in Table 36. Odds ratios were utilized to determine the effect size of the significant variables. The results indicate that for Latinos, African Americans and Whites, high school GPA (the proxy for academic preparation) was a significant predictor within the models. For Latinos and White students, Pell eligibility was a significant predictor within the models. For Latino students ($p<0.05$), every unit increase in academic preparation, the odds of

graduation or persistence increases 2.33 times. Pell eligibility increases the likelihood of a Latino student graduating or persisting by 1.21 times. For African Americans, academic preparation ($p<0.05$) increases the likelihood of graduating or persisting 1.665 times for every unit increase in High School GPA. For Whites, High School GPA ($p<0.01$) increased the likelihood of graduating or persisting by 1.768 times for every unit increase in high school GPA. Pell eligibility ($p<0.05$) decreased the likelihood of a White respondent graduating or persisting by 0.766 times.

Table 36
Summary of Logistic Regression Analysis Predicting Graduation or Persistence by Race for the Baseline Model

Race	Variable	*B*	*SE*	*OR*	*95% CI*	Wald Statistic	*p*
Latino	High School GPA	0.846	0.35	2.331	[1.269, 2.185]	18.018	0.00
	Pell Recipient Status	0.19	0.44	1.21	[1.170, 4.644]	6.73	0.01
African American	High School GPA	0.51	0.137	1.665	[1.269, 2.185]	18.018	0.00
	Pell Recipient Status	-0.31	0.183	0.733	[0.376, 1.050]	2.923	0.09
White	High School GPA	0.57	0.106	1.768	[1.437, 2.176]	30.809	0.00
	Pell Recipient Status	-0.266	0.116	0.766	[.611, .961]	5.324	0.021

Table 36
Logistic Regression Table
Source: Author's Analysis of the 2013 UNC Sophomore Survey

Summary of Findings for the Full Model

Exploring the results of the full models which included constructs of engagement, the model for Latinos, Whites, and African Americans all shared high school GPA and sense of belonging as significant predictors. Satisfaction with Advising Relationship and Financial Guidance were also significant for Latinos. Models for Whites and African American's both resulted in perception of crime, and co-curricular engagement as significant predictors. The model for White's had one unique predictor which was satisfaction with mental health support.

Latinos. Summary results of the variables in the full model for Latinos $(\ln(\frac{\hat{p}}{1-\hat{p}}) = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_0$ where X_1= High School GPA, X_2= Pell Recipient Status, X_3= Factor Score, Satisfaction with Advising, X_4= Factor Score, Satisfaction with Classroom Experience, X_5= Factor Score, Satisfaction with Support Services, X_6= Satisfaction with Library Academic Support, X_7= Satisfaction with Campus Environment, X_8= Satisfaction with Financial Guidance, X_9= Satisfaction with Mental Health Support, X_{10}= Perception of Safety, X_{11}= Perception of Crime, X_{12}= Co-Curricular Engagement, X_{13}= Peer Engagement, X_{14}= Sense of Belonging) are provided in Table 37 and indicate that High School GPA ($p<0.05$), Satisfaction with Advising Relationship ($p<0.05$), Satisfaction with Financial Guidance ($p<0.05$), and Sense of Belonging ($p<0.05$) are all significant predictors within the model. For every unit increase in High School GPA, the odds of graduating or persisting for Latino respondents increased 2.649 times. For every unit increase in the scale, Satisfaction with Advising Relationship, the odds of graduating or persisting increases 2.023 times. This scale measures the satisfaction students feel with the services and relationship they

received or had with their academic advisor. For every unit increase in the scale, Satisfaction with Financial Guidance the odds of a Latino respondent will graduate or persist decreases .489 times. This scale determines the student's satisfaction with the staff and services received related to financial aid awarding, disbursement services as well as billing and cashier services. For every unit increase in the scale, Sense of Belonging, the odds of graduation or persistence for Latino respondents increases 2.544 times.

Table 37
Summary of Logistic Regression Analysis for Full Model Predicting Graduation or Persistence of Latinos

Variable	*B*	*SE*	*OR*	*95% CI*	Wald Statistic	*p*
HS GPA	0.974	0.434	2.649	[1.123, 6.247]	6.207	0.026
Pell Recipient Status	0.313	0.497	1.367	[.276, 1.938]	0.421	0.529
Satisfaction with Advising	0.704	0.3	2.023	[1.121, 3.650]	6.397	0.02
Satisfaction with Classroom Environment	-0.5	0.326	0.607	[.320, 1.150]	2.403	0.126
Satisfaction with Support Services	-0.152	0.297	0.859	[.480, 1.538]	0.281	0.609
Satisfaction with Library Academic Support	-0.132	0.243	0.876	[.544, 1.411]	0.34	0.586
Satisfaction with Campus Environment	0.273	0.4	1.313	[.599, 2.880]	0.564	0.496
Satisfaction with Financial Guidance	-0.716	0.359	0.489	[.242, .989]	4.067	0.046
Satisfaction with Mental Health Support	0.097	0.299	1.102	[.614, 1.979]	0.115	0.744
Perception of Safety	-0.383	0.324	0.682	[.360, 1.292]	1.746	0.238

Table 37 Continued
Summary of Logistic Regression Analysis for Full Model Predicting Graduation or Persistence of Latinos

Variable	*B*	*SE*	*OR*	*95% CI*	Wald Statistic	*p*
Perception of Crime	-0.359	0.325	0.699	[.368, 1.327]	1.515	0.272
Co-curricular Engagement	0.345	0.29	1.412	[.799, 2.493]	1.419	0.235
Peer Engagement	-0.061	0.295	0.94	[.527, 1.677]	0.095	0.835
Sense of Belonging	0.934	0.304	2.544	[1.40, 4.620]	9.724	0.002

Table 37 Logistic Regression Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

African Americans. Summary results of the variables in the full model for African American respondents are provided in Table 38 and indicate that High School GPA ($p< 0.01$), Perception of Safety ($p< 0.05$), Perception of Crime ($p< 0.05$), Co-curricular Engagement ($p= 0.05$), and Sense of Belonging ($p< 0.01$) are all significant predictors in the model. For every unit increase in High School GPA, the odds that an African American respondent will graduate or persist increases 1.521 times. With every unit increase on the scale, Perception of Crime (indicating that there is a perception that students are informed about criminal activity on and around campus and how to prevent it), the odds of graduating or persisting decreases 1.99 times. With every unit increase on the scale, Co-Curricular Engagement, indicating that students are engaging in co-curricular activity on campus regularly, the odds of African American respondents graduating or persisting increases 1.182 times. Finally, with every unit increase on the scale Sense of Belonging, the odds of African American students graduating or persisting increases 1.329 times.

Table 38
Summary of Logistic Regression Analysis for Full Model Predicting Graduation or Persistence of African Americans

Variable	*B*	*SE*	*OR*	*95% CI*	Wald Statistic	*P*
HS GPA	.419	.150	1.521	[1.124, 2.057]	11.1006	0.002
Pell Recipient Status	-.256	.190	.744	[.533, 1.123]	1.477	0.122
Satisfaction with Advising	.029	.082	1.029	[.876, 1.209]	.241	0.672
Satisfaction with Classroom Environment	.067	.091	1.069	[.894, 1.278]	.547	0.411
Satisfaction with Support Services	.061	.107	1.063	[.862, 1.310]	.368	0.760
Satisfaction with Library Academic Support	-0.040	.089	0.961	[.807, 1.144]	.204	0.697
Satisfaction with Campus Environment	-0.041	0.121	.959	[.756, 1.217]	.202	0.449
Satisfaction with Financial Guidance	-0.202	.122	.817	[.643, 1.039]	3.05	0.078
Satisfaction with Mental Health Support	-0.070	.112	.932	[1.010, 1.424]	.773	0.848
Perception of Safety	.182	.088	1.199	[.678, .990]	4.41	0.022
Perception of Crime	-0.199	.096	.819	[.678, .990]	5.141	.039
Co-curricular Engagement	.167	.088	1.182	[.995, 1.405]	3.953	.057
Peer Engagement	-0.001	.104	.999	[.814, 1.225]	.088	.990
Sense of Belonging	.248	.093	1.329	[1.107, 1.596]	9.632	.002

Table 38 Logistic Regression Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Whites. Summary results of the variables in the full model for White respondents are provided in Table 39 and indicate that High School GPA ($p<0.001$), Satisfaction with Mental Health Support ($p= 0.05$), Perception of Crime ($p< 0.05$), Co-curricular Engagement ($p< 0.05$), and Sense of Belonging ($p< 0.001$) were all significant predictors in the model. For every unit increase in High School GPA, the likelihood of graduating or persisting for White respondents increases 1.511 times. For every unit increase on the scale, Satisfaction with Mental Health Services, indicating the respondent is satisfied with counseling services received, the odds of graduating or persisting decreases .865 times. For every unit increase on the scale Perception of Crime, the odds of graduating or persisting for White respondents decreases .850 times. For every unit increase on the scale Co-Curricular Engagement, the odds of graduating or persisting increases 1.177 times. Finally, with every unit increase in the scale Sense of Belonging, the odds of White respondents increases 1.70 times.

Table 39
Summary of Logistic Regression Analysis for Full Model Predicting Graduation or Persistence of Whites

Variable	*B*	*SE*	*OR*	*95% CI*	Wald Statistic	*p*
HS GPA	.413	.115	1.511	[1.206, 1.893]	2.921	0.000
Pell Recipient Status	-0.178	.126	.837	[.654, 1.072]	2.013	0.159
Satisfaction with Advising	-0.004	.070	.996	[.869, 1.143]	.003	0.960
Satisfaction with Classroom Environment	.020	.082	1.020	[.869, 1.198]	.086	0.806

Table 39 Logistic Regression Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Table 39 Continued
Summary of Logistic Regression Analysis for Full Model Predicting Graduation or Persistence of Whites

Variable	*B*	*SE*	*OR*	*95% CI*	Wald Statistic	*p*
Satisfaction with Support Services	-0.035	.071	.966	[.841, 1.109]	.259	0.624
Satisfaction with Library Academic Support	-0..047	.076	.954	[.822, 1.108]	.408	0.538
Satisfaction with Campus Environment	.080	.088	1.084	[.912, 1.288]	.862	0.362
Satisfaction with Financial Guidance	-0.093	.076	0.911	[.786, 1.057]	1.596	0.218
Satisfaction with Mental Health Support	-0.145	.076	.865	[.746, 1.004]	3.826	0.057
Perception of Safety	-0.021	.073	0.979	[.849, 1.130]	.104	0.772
Perception of Crime	-0.162	.075	0.850	[.734, .985]	4.944	0.031
Co-curricular Engagement	.163	.073	1.177	[1.020, 1.357]	5.031	0.025
Peer Engagement	-0.127	.089	0.881	[.740, 1.049	2.348	0.153
Sense of Belonging	0.531	.074	1.700	[1.470, 1.966]	56.142	0.000

Table 39Logistic Regression Table
Source: Author's Analysis of 2013 UNC Sophomore Survey

Research Sub-question Four: What is the relationship in effect sizes of independent variables between Latinos, African Americans and Whites? A comparison of the effect sizes of High School GPA and Sense of Belonging between Latinos, Whites, and African Americans reveals that these two variables have a greater effect on the likelihood of persistence for Latinos than the other two groups. The difference in effect size for Sense of Belonging is statistically significantly different for

African Americans and High School GPA is statistically significantly different for Latinos.

In order to compare the logistic coefficients and odds ratios across the three samples, these coefficients were standardized in the full model. In order to standardize the logistic regression coefficient (the beta coefficient or B), the formula $\beta = B(SD_x)(\sqrt{R^2})/SD_{logitY}$ was applied to each independent variable in the full model (Menard, 2011). Standardized odds ratios were then computed from the standardized logistic regression coefficients using the formula $\exp(b)$. Table 39 compares the regression coefficients and odds ratios that each sample has in common.

The two predictor variables that proved significant for each sample were High School GPA and Sense of Belonging. When comparing the standardized odds ratios for these two variables across the three samples, both seem to have a stronger relationship with the odds that a Latino respondent will graduate or persist. With every unit increase in the standard deviation of high school GPA, the odds that a Latino respondent will graduate or persistence increases 6.01 times. This compares to an increase in the odds of graduation or persistence for Whites and African Americans of 2.778 and 1.089 times respectively. For every unit increase in the standard deviation of the sense of belonging scale, the odds that a Latino respondent will persist or graduate increases 15.538 times. One unit increase in the standard deviation of the sense of belonging scale increases the odds of graduation or persistence for a White respondent 9.725 times and 5.230 times for an African American respondent. These effect sizes should be interpreted with caution however, the finding that Sense of Belonging and High School GPA have a more

significant impact on graduation/persistence for Latinos over the other two groups is important.

African American and White respondents had two other significant predictors in common. These were Perception of Crime and Co-curricular Engagement. Perception of Crime had a stronger negative relationship with the odds of African American respondents to persist or graduate than on White respondents. With every unit increase in the scale, Perception of Crime, the odds of an African American graduating or persisting decreases .5138 times compared to .048 times for White respondents. This is opposite the co-curricular scale where for every unit increase in the standard deviation of the Co-curricular Scale, the odds of graduation or persistence increases 1.954 times for White respondents and 1.051 times for African American respondents. Table 40 summarizes the findings.

Table 40

Standardized Regression and Odds Coefficients by Race

	Latinos			African Americans			Whites		
Variable	***B***	***Est. Stand B***	***Est. Stand OR***	***B***	***Est. Stand B***	***Est. Stand OR***	***B***	***Est. Stand B***	***Est. Stand OR***
HS *GPA*	0.974	1.794*	6.013	0.419	0.855**	1.089	0.4130	1.021***	2.778
Pell	0.313	0.486	1.626	-0.256	-0.371	0.689	-0.1780	-0.379	0.684
Advising	0.704	2.062**	7.869	0.029	0.106	1.111	-0.0040	-0.017	0.982
Classroom Exp	-0.50	-1.464	0.231	0.067	0.251	1.286	0.0200	0.084	1.088
Support Services	-0.152	-0.493	0.610	-0.040	-0.124	0.882	-0.0350	-0.164	0.848
Library	-0.132	-0.420	0.656	-0.041	-0.145	0.864	-0.0470	-0.204	0.815
Campus Environment	0.273	0.836	2.308	-0.202	-0.670	0.511	0.0800	0.347	1.415
Financial Guidance	-0.716	-2.182*	0.112	-0.070	-0.196	0.980	-0.0930	-0.450	0.637
Mental Health	0.097	0.323	1.382	0.182	0.601	1.825	-0.1450	-0.678*	0.507
Perception Safety	-0.383	-1.124	0.324	-0.199	-0.665*	0.513	-0.0210	-0.090	0.913

Table 40 Standardized Regression and Odd Coefficients

Note: * indicates significance at the .05 level, ** indicates significance at the .01 level, and *** indicates significance at the .001 level

Source: Author's Analysis of 2013 UNC Sophomore Survey Data

Table 40 Continued

Standardized Regression and Odds Coefficients by Race

	Latinos			African Americans			Whites		
Variable	***B***	***Est. Stand B***	***Est. Stand OR***	***B***	***Est. Stand B***	***Est. Stand OR***	***B***	***Est. Stand B***	***Est. Stand OR***
Perception Crime	-0.359	-1.108	0.329	-0.199	-0.665*	0.513	-0.1620	-0.717*	0.048
Co-curricular Engagement	0.345	1.001	2.720	0.167	0.050*	1.051	0.1630	0.670*	1.954
Peer Engagement	-0.061	-0.183	0.832	0.284	1.010	3.009	-0.1270	-0.546	0.579
Sense of Belonging	0.934	2.743***	15.538	0.470	1.654**	5.230	0.5310	2.274***	9.726

Table 40 Standardized Regression and Odds Coefficients

Note: * indicates significance at the .05 level, ** indicates significance at the .01 level, and *** indicates significance at the .001 level

Source: Author's Analysis 2013 UNC Sophomore Survey

In order to determine whether these results are statistically significantly different from one another, the slopes of standardized beta coefficients need to be compared to test the null hypothesis that the standardized beta coefficients are equal to one another ($h_o = \beta_1 - \beta_2 = 0$). The following formula was used to test the significance between the slopes of the variables, High School GPA and Sense of Belonging, $Z = \frac{b_1 - b_2}{\sqrt{SE_{b1}^2 + SE_{b2}^2}}$, (Clogg, Petkova, & Haritou, 1995). Where b_1 and b_2 are the slopes of the lines 1 and 2, SE_{b1} and SE_{b2} are the standard errors for lines 1 and 2 (or the standard deviation of logit y). Tables 41 and 42 illustrate the results of these tests. The differences between the standardized coefficients are statistically significantly different for African Americans for sense of belonging and statistically significantly different for Latinos for academic preparation. Sense of belonging is therefore related differently to African Americans and academic preparation is related differently to Latinos than for the other respondents.

Table 41
Two Tailed Test of Significance of Betas between Samples-Sense of Belonging

Comparison	Z-value
African Americans and Latinos	-8.782*
Whites and Latinos	-1.367
White and African American	8.56*

Table 41 Test of Significance Table
Note *denotes p<0.05

Table 42
Two-Tailed Test of Significance of Betas between Samples-Academic Preparation

Comparison	Z-value
African American and Latino	-7.565*
White and Latino	-6.725*
White and African American	1.276

Table 42 Test of Significance Table
Note: * denotes $p<0.05$

Summary

In total, twelve latent constructs of engagement were present in the 2013 UNC Sophomore Survey. Differences in the means of these factor scores existed between Latino and White respondents and indicated that there was merit in examining separate models for each ethnic/racial category. The latent constructs with statistically significantly different means included, Satisfaction with Classroom Experience, Satisfaction with Advising Relationship, Satisfaction with Campus Support for Student Success, Satisfaction with Library Academic Support, Satisfaction with Financial Guidance, Co-Curricular Engagement, Peer Engagement, and Sense of Belonging.

Logistic regression identified the models that were most predictive of graduation or persistence for each of the samples (Latino respondents, African American respondents, and White respondents). The full model was most predictive for Latino students and the reduced models were more predictive for Whites and African Americans. Sense of Belonging and High School GPA were significant predictors for Whites, African Americans, and Latinos. Satisfaction with Advising Relationship and Satisfaction with Financial Guidance were significant predictors for Latinos. Perception

of Crime and Co-curricular Engagement were significant predictors for African Americans and Whites. Perception of Safety was a significant Predictor for African Americans and Satisfaction with Mental Health Support was a significant predictor for Whites. Comparing the standardized coefficients between samples revealed that the two common predictor variables, High School GPA, had a statistically significantly different relationship with the likelihood that a Latino respondent would graduate or persist than the same predictor had for White and African American respondents. Sense of Belonging was found to have a statistically significantly different relationship with the likelihood that a African American respondent would graduate or persist than the same predictor had for Latin or White respondents.

These results show that the engagement constructs that are most predictive of graduation and persistence are different for Latino students than for other racial/ethnic groups. Interpretation and implications of these findings will be discussed in Chapter 5. Table 43 summarizes the various research questions and the results of the tests utilized to answer them.

Table 43

Research Hypothesis and Results

Null Hypothesis	Alternative Hypothesis	Test	Research Question	Result
H_0= σ_1^2= σ_2^2=⋯=σ_k^2	H_1= σ_1^2≠ σ_2^2≠⋯≠σ_k^2 For at least one pair (i_j)	Bartlett's Test of Sphericity	Is the sample matrix an identity matrix?	Reject the null
H_0= KMO < 0.5	H_1= KMO > 0.5	Kaiser-Mayer Olkin Test of Sampling Adequacy	Is the sample adequate for factor analysis?	Reject the null
h_0: d_o= d_e	h_1: d_o≠ d_e	x^2Goodness of Fit Test	Is the final rotated factor matrix a good fit for the data?	Reject the null (for each survey section)
μ_1- μ_2=d	μ_1- μ_2≠d	Independent Samples T-Test	Are the means of the factor scores statistically different from one another by race?	Reject the null (for six constructs) Accept the null (for six constructs)

Table 43

Research Hypothesis Table

Table 43 Continued
Research Hypothesis and Results

Null Hypothesis	Alternative Hypothesis	Test	Research Question	Result
			Does the base model predict completion better than the null model?	Reject the null: The base model predicts completion better than the null model for all samples
			Does the full model predict completion better than the null and baseline models	Reject the null: The full model predicts completion better than the null and baseline models for all samples
$H_0= \beta_1=\beta_2=\beta_3 \ldots \beta_k$	$H_1: \beta_j \neq \beta_i$ for at least one pair	Omnibus Test of Model Coefficients	Does the full model predict completion better than the reduced model	Accept the null: The full model does not predict completion better than the reduced model for all samples
H_0: $-2LL_{\text{null model}} = -2LL_{\text{proposed}}$	H1= $-2LL_{\text{null model}} \neq -2LL_{\text{proposed model}}$	Hosmer Lemeshow Test	Are the models good fits for the observed data?	Accept the null for all models: All models are good fits for the data

Table 43
Hypothesis and Results Table

Table 43 Continued
Research Hypothesis and Results

Null Hypothesis	Alternative Hypothesis	Test	Research Question	Result
H_0: $\beta_j=0$	H_1: $\beta_j \neq 0$	Wald Test Statistic	Are the coefficients for each predictor variable in the model statistically significant	Reject the null: Significant coefficients exist
H_0: OR=1	H_1: OR$\neq$ 1	Odds Ratio	Which variables have the largest effect size?	Full Model: High School GPA and Sense of Belonging
H_0: $\beta_j=0$	H_1: $\beta_j \neq 0$	Standardized Wald Test	What is the relationship in effect sizes of independent variables between Latinos, African Americans and Whites?	Reject the null (sense of belonging and high school GPA)

Table 43
Hypothesis and Results Table

Table 43 Continued
Research Hypothesis and Results

Null Hypothesis	Alternative Hypothesis	Test	Research Question	Result
H_0: $r_{x1} = r_{x2} = r_{x3} \ldots r_{xk}$	H_1: $r_{x1} \neq r_{x2} \neq r_{x3} \neq \cdots r_{xk}$	Standardized Odds Ratios	What is the relationship in effect sizes of independent variables between Latinos, African Americans and Whites?	Reject the null (sense of belonging and high school GPA)
H_0= β1- β2=0	H_0= β1- β2≠0	z-test of standardized slopes	What is the relationship in effect sizes of independent variables between Latinos, African Americans, and Whites?	Reject the null (sense of belonging for African Americans and academic preparation for Latinos)

Table 43
Research Hypothesis and Results

Chapter V: Interpretations, Conclusions, and Recommendations

As discussed in the introduction, Latino students are entering college at higher rates than they have in the recent past (Aud, Fox, & KewelRamani, 2010; Krogstad, & Fry, 2014; Pryor, Hurtado, Saenz, Santos, & Korn, 2007; Snyder & Dillow, 2009). Despite this increase in enrollment, there has not been a subsequent increase in the percentage of Latino students who complete a bachelor's degree. There has been a substantial amount of research seeking to uncover the reasons why Latinos, and other minority students, do not complete degrees. More recent research has begun to explore the reasons for Latino, and minority, student persistence and has uncovered a variety of engagement areas that contribute to persistence. These include, academic engagement (the classroom environment and engagement in academically related activities), co-curricular engagement (activities that support academic growth such as tutoring), and peer engagement (involvement in student organizations and leadership experiences). However, other studies have had conflicting results indicating some areas of engagement (such as co-curricular and peer engagement) are not as strongly tied to persistence for some minority groups including Latinos. Particularly for Latino students, the presence of on-campus support networks has been proven to be important to their retention and persistence. Strong ties to family and home communities have also been linked to retention and persistence for Latinos (Cabrera, Nora, Terenzini, Pascarella, Hagedon, 1999; Delgado, 2002; Emers & Pike, 1996; Gloria, Robinson-Kurpius, Hamilton & Wilson, 1999; Gonzalez, 2000; Guiffrida, 2003, 2005; Hendricks, Smith, Caplow & Donaldson, 1996; Hurtado, Carter, & Spuler, 1996; Murguia, Padilla, & Pavel, 1991; Nora, 2001, Nora, & Cabrera, 1996; Padilla, Trevino, Gonzalez, & Trevino, 1997; Rosas

& Hambrick, 2002). These represent a different sort of engagement from what is typically studied in higher education. To better understand the various roles different types of engagement play in the persistence and graduation patterns of Latino students, this study explored a wide variety of engagement constructs to determine which are most predictive of graduation and persistence.

The research question which guided this study was whether (and to what extent) is there a relationship between constructs of engagement, socio-economic status, and academic preparedness on Latino baccalaureate completion. To answer this question, it was necessary first to determine whether there were constructs of engagement present in the 2013 UNC Sophomore Survey. Therefore, tue research question related to this inquiry was whether the 2013 UNC Sophomore Survey measured constructs of engagement. Since this research was focused specifically on Latinos, it was important to substantiate the hypothesis that there were differences between engagement scores by race and ethnicity. Consequently, a separate research question was examined, namely, whether there was a difference in factor scores on the various engagement scales by race and ethnicity. The final research questions in this study were whether constructs of engagement were related to completion/persistence and if so, which had the strongest association with the outcome. Results were compared between the racial/ethnic groups to highlight whether and if constructs functioned differently for each respondent group. Table 44 below depicts the major research questions in this study and their findings.

Table 44

Research Questions and Findings

Research Questions	Finding
Is the 2013 UNC Sophomore Survey Measuring constructs of engagement	Yes, 13 constructs of engagement were found in the survey
Is there a relationship between constructs of engagement, academic preparation, socio-economic status, and persistence/graduation	Yes, each of these independent variables was statistically significant in the model predicting persistence/graduation
Are these relationship different for different racial categories?	Yes, Satisfaction with Advising Relationship and Satisfaction with Financial Guidance were unique significant predictors for Latinos Perception of Crime and Co-curricular Engagement were unique significant predictors for African American and White Students Satisfaction with Mental Health Support was a unique predictor for Whites Perception of Safety was a unique predictor for African Americans
Is there (and to what extent) a relationship between hypothesized constructs of engagement, socio-econoic status, and academic preparation on Latino baccalaureate completion	Academic Preparation (increases likelihood by 2.649 times) Satisfaction with Advising Relationship (increases likelihood by 2.023 times) Satisfaction with Financial Guidance (decreases likelihood by 0.489 times) Sense of Belonging (increases likelihood by 2.544 times)*

Table 44 Research Questions and Findings

Note: *Unstandardized odds ratios reported

Discussion of Findings

Constructs of Engagement found in the 2013 UNC Sophomore Survey. Several of the engagement constructs present in the 2013 UNC Sophomore Survey mirrored the National Survey of Student Engagement and other studies. After completing factor analysis, thirteen constructs of engagement emerged. These engagement constructs represented different types of engagement or satisfaction a student experiences with an

institution. These factors included, Satisfaction with Advising Relationship; Satisfaction with Classroom Experience; Satisfaction with Support Services; Satisfaction with Library Academic Support; Satisfaction with Campus Environment; Satisfaction with Financial Guidance; Satisfaction with Mental Health Services; Perception of Safety on Campus; Perception of Crime on Campus; Co-curricular Engagement; Peer Engagement; Sense of Belonging. Each of the constructs can be categorized into one of three areas, supportive campus environment, engagement and involvement, and sense of belonging. Engagement constructs found in the 2013 UNC Sophomore Survey have been organized into these three categories in Table 45 below.

Table 45
Categorization of Engagement Constructs

Supportive Campus Environment	Sense of Belonging	Engagement and Involvement
Satisfaction with Advising Relationship	Sense of Belonging	Co-curricular Engagement
Satisfaction with classroom experience		Peer Engagement
Satisfaction with campus support services		
Satisfaction with library academic support services		
Satisfaction with campus environment		

Table 45 Categorization Table

Table 45 Continued

Categorization of Engagement Constructs

Supportive Campus Environment	Sense of Belonging	Engagement and Involvement
Satisfaction with financial guidance Satisfaction with mental health services Perception of Safety Perception of Crime		

Table 45 Categorization Table

Based on Webber, Bauer-Krylow, and Zhang (2013) and the structure of the National Survey of Student Engagement (NSSE), satisfaction constructs present in the 2013 UNC Sophomore Survey also serve as indicators of engagement. Student satisfaction is a dimension of engagement measured in the widely utilized NSSE survey. The NSSE is divided into five categories, educationally purposeful activities, institutional requirements, perceptions of features of the college environment that are associated with achievement, satisfaction and persistence (including the extent to which the institution offers the support students need to succeed academically and the quality of relations among various groups on campus such as faculty and students), demographic and background information, and estimates of general and personal growth (Kuh, 2009). Links between student satisfaction and engagement have also been found by researchers (Chen, Ingram, Davis, 2014; Webber, Bauer Krylow, and Zhang, 2013). In Chen, Ingram, and Davis' (2014) study a supportive campus environment was found to be a statistically significant indicator of satisfaction. The researchers categorized a supportive campus environment as an engagement construct similarly to NSSE's

classification. When examining the factors in this study, all but Sense of Belonging, Peer Engagement, and Co-curricular Engagement lend themselves to this idea of supportive campus environments. Each of the other constructs speaks to the students' satisfaction with their interactions and experiences with aspects of campus that are present to provide specific supports. These include academic advising; faculty interaction and support; various student services including financial aid, the library, and mental health counseling; and the campus environment which includes aspects of campus life like residence halls, dining services, parking, and interactions with other institutional personnel.

Webber et al. (2013) found that higher levels of engagement in various activities were associated with higher perceived satisfaction with the academic experience. In fact, Webber et al.'s study (2013) noted that meaningful interactions with faculty, peers, and other institutional agents combined with participation in various curricular and co-curricular activities led the student to be more excited about the institution. Excitement and the connections that are formed during these interactions lead to greater satisfaction with the institution and the overall academic experience. Constructs of satisfaction and engagement/involvement were also related in this research study.

The other constructs, sense of belonging, peer engagement, and co-curricular engagement are aligned with theories of student engagement and involvement developed by Kuh (2003), Hurtado and Carter (1997), and Astin (1984). These constructs measure the type and frequency of activities that students engage in outside of the classroom that enhance their educational experience (co-curricular), build relationships with peers (peer engagement), and their feeling of belonging or "fit" at the institution (sense of belonging).

Based on the identification of these factors within the survey, it is clear the 2013 UNC Sophomore Survey is measuring varied constructs of engagement. The presence of these various constructs allowed for the exploration of the relationship between different types of engagement and graduation/persistence.

Factor Score Differences between Racial/Ethnic Groups. The presence of varied engagement constructs in the 2013 UNC Sophomore Survey established the feasibility of exploring the relationship between different types of engagement and graduation or persistence for Latinos. The critical quantitative approach employed by this study directed the decision to run each of the statistical models separately for each racial/ethnic group. Approaching the quantitative analysis in this way recognizes that theory functions differently for diverse groups of people. Not only does theory function differently, but the experiences of minority students are vastly different than the experiences of White students. Critical quantitative theory emphasizes exploring quantitative and theoretical models separately for minority groups. Separating models, versus including race as a categorical independent variable, allows for the process of the theory to vary by racial group and highlights the differences between them. Teranishi (2007) recognizes that approaches which simply compare race as a categorical variable views minority populations as inferior, underprivileged, or underrepresented and as underachievers; individuals who are successful are upheld as models. Allen (1999) cites this paradigm as a "misguided and counterproductive game of 'oppression sweepstakes'" (p. 206-207) pitting groups against one another in a competition of oppression. Examining populations in isolation acknowledges their diverse experiences.

In order to rationalize a critical quantitative approach to running the statistical models, differences in factor scores were explored through the use of T-tests. Based on prior research, there was reason to believe that engagement would function differently within the models for different ethnic/racial groups. Not only did prior research establish a case for a differential function statistically, prior research also established a case that engagement has a differing qualitative relationship for students from various racial/ethnic backgrounds. In other words, there was reason to believe that the theory of student engagement and involvement functions differently for different groups of students.

Student experiences and the ways they choose to engage with their college or university vary based on many factors. As the literature throughout this study has illustrated, two of these factors are race/ethnicity and culture. Claims from prior research indicating a difference in the way theories of student engagement and involvement function for racial groups was substantiated by the finding that mean scores on several engagement constructs were statistically significantly different for White and Latino respondents. Specifically, Satisfaction with Classroom Experience, Satisfaction with Campus Support Services, Satisfaction with Library Academic Support, Satisfaction with Financial Guidance, Co-curricular Engagement, and Peer Engagement had statistically significantly different means scores for Whites and Latinos. The fact that there are differences in means scores hint that student behaviors are different between racial and ethnic groups. Variances in behavior are indicators of the wide-ranging experiences of students which should be explored in context to better understand whether, how, and to what extent current theories of student engagement and involvement are relevant for minority students; and for the purposes of this study, Latinos.

Variables Predictive of Graduation or Persistence. Theories of student engagement and involvement do function differently for Latinos than for either Whites or African Americans. Traditional definitions of engagement and involvement which have centered on academic, co-curricular, or extra-curricular activities, do not fully explain the ways Latino students engage or establish a sense of belonging with their institution. Likewise, the ways in which an institution has traditionally engaged with its students should be different based on the students it serves.

Two findings emerged from the exploration of engagement constructs as predictors of completion or persistence. The first set of findings identified the engagement constructs which were statistically significant predictors in the models for each racial/ethnic group. The second set of findings identified how these engagement constructs related between samples and highlighted those that were most predictive for different racial/ethnic groups. Running separate models for each racial/ethnic category acknowledges that the theory of student engagement functions differently for each group and allowed for the full exploration of these differences. A key component to critical quantitative theory is the examination of quantitative data in ways that acknowledge that processes, theories, and experiences function differently for diverse groups of people. Examining the predictive models separately by racial/ethnic group uncovered varied statistically significant predictors of graduation/persistence for the three categories of race/ethnicity studied (Latino, African American, and White). Models containing all engagement factors, high school GPA, and Pell eligibility were analyzed for each sample (referred to as the "full model").

The full model for Latino respondents resulted in high school GPA, sense of belonging, academic preparation, satisfaction with financial guidance, and satisfaction with advising relationship being statistically significant predictors of graduation/persistence. Of these, academic preparation had the strongest relationship with the odds of graduation or persistence. For every unit increase in high school GPA the likelihood a Latino respondent would graduate or persist increased 2.649 times. Sense of belonging also had a strong relationship with the odds of graduation or persistence increasing the odds of graduation or persistence 2.544 times for every one unit increase in the sense of belonging scale. Satisfaction with advising relationship was associated with the increased odds of graduation or persistence 2.023 times for every one unit increase in the satisfaction with advising scale. Satisfaction with financial guidance had a negative association with persistence or graduation. For every unit increase in the satisfaction of financial guidance scale, the odds of a Latino respondent departing decreased .489 times. The reader will recall that this scale asks students to rate their satisfaction with the staff and services received related to financial aid award/disbursement and billing/cashier. When students felt less satisfied with the services or staff in these areas, their odds of graduating and persisting were increased.

Different engagement constructs proved to be significant predictors in the full model for African American respondents. High school GPA, sense of belonging, academic preparation, perception of safety, perception of crime, and co-curricular engagement were all statistically significant predictors of graduation/persistence. As with Latinos, academic preparation had the strongest association on the odds of an African American respondent graduating or persisting. The odds increased by 1.521

times for every unit increase in high school GPA. Sense of belonging had the next strongest association; the odds of persistence or graduation increased by 1.329 times for every unit increase in the scale sense of belonging. Perception of crime had the opposite relationship. The odds of an African American student graduating or persisting decreased by 1.99 times for every unit increase in the scale perception of crime. Finally, the engagement construct of co-curricular engagement was associated with the increased odds of graduation or persistence by 1.182 times for every one unit increase in the co-curricular engagement scale.

The final full model examined was for White respondents. In this model, academic preparation and sense of belonging were shared predictors between the three racial/ethnic groups. White and African American respondents shared co-curricular engagement and perception of crime as significant predictors. There was one statistically significant engagement construct for White respondents, satisfaction with mental health services. For White respondents, sense of belonging had the strongest relationship with the odds of graduation or persistence. For every unit increase in the sense of belonging scale, the odds of graduation or persistence increased by 70%. For every unit increase in high school GPA, the odds of graduation or persistence increased 51.1%. Co-curricular engagement was the third most predictive construct of engagement. For every unit increase in the co-curricular engagement scale, the odds of White respondents graduating or persisting increased by 17.7%. The constructs satisfaction with mental health support and perception of crime both had a negative association with graduation or persistence. For every unit increase in the scale perception of crime, the odds of a White respondent graduating or persisting decreased

by 15%. This particular predictor had the same negative association with African American respondents but was not a significant predictor for Latino respondents. Likewise, for every increase in the scale, satisfaction with mental health support, the odds of graduation or persistence decreased by 13.5%. Again, this was the only unique statistically significant predictor for White respondents.

After identifying the common statistically significant predictors among the three groups, the relationship between the groups was examined to reveal which of the common factors had the strongest relationship with the prediction that respondents would graduate or persist. The only two common statistically significant predictors were academic preparation and sense of belonging. After standardizing the coefficients and comparing them between samples, both constructs had a stronger association with the odds that a Latino respondent will graduate or persist than they did for either African American or White respondents. For every unit change in the standard deviation of academic preparation, Latino respondents' odds of graduation or persistence increase by 6.01 times as compared to 1.089 times for African Americans and 2.77 times for Whites. For every unit increase in the standard deviation of the sense of belonging scale, the likelihood of Latino respondents' graduating or persisting increases by 15.53 times as compared to 5.23 and 9.725 times for African American and White respondents respectively.

Comparing the two common constructs between White and African American respondents revealed that both constructs, perception of crime and co-curricular engagement had a greater association for White respondents than African Americans. For every unit increase in the perception of crime scale, the odds of an African

American respondent graduating or persisting decreased .513 times versus .048 times for White respondents. Recall that this scale is measuring how satisfied an individual is with the amount of information available about crime, crime prevention, and safety on campus. An increase in the score on this scale represents a students' perception that they have adequate information about crime on their campus and they feel they are adequately prepared to prevent crime or improve their safety. Similar results were found when comparing the co-curricular engagement scale. For African American respondents, for every unit increase in the standard deviation of the co-curricular engagement scale, the odds of graduation or persistence increase 1.05 times as compared to 1.95 times for White respondents. Table 46 below depicts these comparisons.

Table 46
Standardized Predictor Comparisons by Race/Ethnicity

	Academic Preparation	Sense of Belonging	Perception of Crime	Co-curricular Engagement
Latino	6.01	15.53		
African American	1.08	5.23	.513	1.05
White	2.77	9.72	.048	1.95

Table 46 Standardized Predictor Comparison Table
Source: Author's Analysis of the 2013 UNC Sophomore Survey

Another interesting finding is that Pell recipient status was not a significant predictor of graduation or persistence for Latinos or African Americans in any of the models, even when the only two predictors were academic preparation and Pell eligibility. Pell eligibility was a significant predictor for White students before engagement factors were introduced into the model. Literature often cites the importance of socio economic status as a significant determiner of student success however; these

findings are in direct conflict with those claims where minority students are concerned. Because White students often make-up a large proportion of sample sizes, the fact that Pell eligibility is often found to be a significant predictor could be related to the distribution of the samples in certain studies. The diversity of the predictive engagement constructs is support for investigating separate models for different racial and ethnic groups.

Interpretations

The focus of this study was the relationship between constructs of engagement and the likelihood that a Latino student will graduate or persist. Therefore, the interpretations presented here focus solely on the results for this population of students. Five engagement constructs were found to be statistically significant predictors of the odds that a Latino respondent would graduate or persist. These were sense of belonging, academic preparation, satisfaction with financial guidance, and satisfaction with advising relationship. Two common engagement constructs often cited as being important factors for student success were not found to be statistically significant predictors of the probability that a Latino respondent would graduate or persist; peer engagement and co-curricular engagement. Pell eligibility also was not an indicator that a student would graduate or persist.

Findings substantiate prior research claims that the theories of student engagement and involvement do not function in the same ways for all racial and ethnic groups. The inclusion of so many dimensions of engagement in this study, and the resulting significant forms of engagement, indicate that the traditional definitions of

engagement are too narrow for the changing demographic of student currently enrolled in higher education. Financial guidance and counseling has a strong association with persistence for Latino students. Given the timing of this particular survey, financial guidance may be a key component during the transition to college. How sense of belonging is established may be different for Latinos than other racial/ethnic groups given the other statistically significant forms of engagement. Co-curricular and peer engagement as well as academic engagement may not be as important as students are transitioning to college but, may become more important as students' progress through their educational journey. However, academic preparation for college is still strongly associated with the odds of a Latino student persisting or graduating.

It was not surprising that sense of belonging was found to be a significant predictor of graduation or persistence for all racial/ethnic groups. In particular, it was found to have a stronger relationship for Latino students. Sense of belonging can be thought of as a precursor to engagement. As Hurtado and Carter (1997) noted, students who feel a sense of belonging at their institution may be more likely to engage because they feel that they are accepted as they are and aren't required to adjust their belief or value systems. Retaining belief and value systems allows students to maintain affiliations with multiple communities (both inside and outside of the institution) and establish themselves within the culture of the institution. This definition is important given the other significantly related forms of engagement found in this study. The idea of sense of belonging is often linked to peer or co-curricular engagement. Results from this study indicate that during a student's transition to college, sense of belonging is instilled

through a sense of financial security or feeling they can afford their education, academic preparation, and strong relationships with advisors.

Satisfaction with advising and Satisfaction with financial guidance illustrate the interaction between the student and the institution. These two areas, finances and academic advising, could be integral for two reasons, the first is related to socio-economic status and the second is related to the likelihood of being a first generation college student. Finances and degree pathways can contribute to such high levels of stress and uncertainty, that when students do not feel supported in these areas, they are less able to focus on or open to building relationships with others on campus such as faculty and peers.

Students who were more satisfied with the services they received may feel they have a clearer picture of their financial situation. If a student, or their family, was concerned about the cost of attending college, having a clear picture of the cost of attendance may deter them from completing college. As prior literature shows, a clear cost of attendance does not necessarily equate to a clear understanding of available financial aid which leads to a misunderstanding about the affordability of college. Students and families may feel they are receiving a satisfactory level of service but may not be receiving all of the necessary guidance and answers necessary to have a complete understanding of how to finance education. Additionally, this construct measures the student's satisfaction with financial guidance and does not take into account how parents and families may feel. Although students may feel that they have adequate information because of the timeliness of billing, aid awards, and reimbursements, this does not

necessarily mean parents and families are satisfied or feel that they have an adequate understanding of the options available to finance education.

Latinos are more likely to attend a community college than any other racial/ethnic group. Deciding to start at a community college could be linked to price consciousness and having lower incomes. It is unknown whether the respondents in this survey were native or transfer students so this discussion is in light of literature supporting the likelihood of Latino students attending community colleges over four-year institutions. The Pew Research Center (2015), reports that Latino students are significantly less likely to have student debt than other groups which can be attributed to the fact that many of them attend lower cost community colleges. There is also theory that Latinos are less likely to take on student loans and instead more likely to attend part-time and work part or full-time to pay for college (Santiago, 2011). Latino families are also less likely to know about federal loan programs (College Board, 2010). As has already been stated, Latinos are more likely to be the first in their families to attend college. All of these data points illustrate that Latino students and their families are less informed about the available means to finance an education and therefore likely have more questions and a greater need for financial guidance than most students. Because many Latino students come from low income homes, the pressure and anxiety around paying for college is high and likely the first point of concern before academic issues.

Similarly, academic advising support is a key component for all students but, particularly transfer students who need guidance on maximizing the credits they have already earned and first-generation students who require additional support. Several studies have found academic advising to be an important factor in student success

(Crockett, 1978; Drake, 2011; Young-Jones, Adena, Burt, Dixon, and Hawthorne, 2013). Young-Jones, Adena, Burt, Dixon, and Hawthorne's study (2013) found that students who met with an academic advisor regularly had higher levels of perceived support, stronger study skills, higher levels of student responsibility, and higher self-efficacy. Perceived student support has been found to be directly linked to retention (Shelton, 2003). Having a strong support system at the institution, particularly someone to help navigate the bureaucracy on campus is key for several reasons. Latino students are often the first in their families to attend college, be from low income households, have a higher likelihood of attending lower performing schools prior to their enrollment in college, lower levels of self-efficacy, and often work full or part-time while attending school.

Academic Preparation was another statistically significant predictor of the likelihood that a Latino respondent would persist or graduate. Again, this finding was not surprising given the prior research on the importance of academic preparation to student success (Bordes Edgar et. al., 2011; Cerna et. al, 2009; Cole, 2008; Dennis, et. al., 2005; Fisher, 2007). Latinos are more likely to come from under-resourced schools (Contreras, 2005; Crisp, Nora, Taggart, 2009; Garcia & Bayer, 2005; Goldrick-Rab, 2006; Goldrick-Rab, Carter, Winkley Wagner, 2007; Merisotis & McCarthy, 2005) which affects their level of academic preparation. Several researchers (Cerna, Perez, and Saenz, 2009) have identified GPA and academic performance while in high school as important indicators of college grades and completion for Latino students. This finding supports the importance of academic preparation to success in college.

The finding that peer and co-curricular engagement were not significant predictors of the probability that Latino respondents would persist or graduate is in-line

with other research finding connections with family and cultural communities. Hurtado and Carter (1997) and Laden (2001), among others, found that maintaining family relationships during the first year was vital to Latino student transition and recommended strengthening the engagement between Latino families and the institution as a way of encouraging family relationships with their students. Studies which had this finding often did not include other measures of engagement such as institutional support metrics or sense of belonging. The finding that these are not statistically significant predictors does not necessarily mean they are not important. It may also mean that co-curricular and peer engagement become more important as a student progresses in their academic career. As sophomores, perhaps the most important factors leading to retention are phenomena that take place during the transition to college.

Of note, the sample population appear to be academically prepared for college, based on the median GPA, which could be biasing the results of this study. The academic preparation of these students and the fact that many of the respondents had little or no experience with academic support services makes it difficult to draw any conclusions about the role of engagement with academic support services. Respondents in this sample were aware of these services but perhaps due to their level of academic preparation did not have a need in their first two years of study to access them. The picture presented through this study is how engagement functions for well-prepared students. Further analysis should be conducted to determine whether engagement functions the same way for students with less academic preparation.

Limitations

The effect sizes reported in this study should be interpreted with caution due to sample sizes in cells for non-graduates or those who are no longer enrolled. A large majority of the sample, for all race and ethnic groups, graduated or persisted but the larger overall sample sizes for African Americans and Whites meant there were more individuals in each category. In addition, the comparison of odds ratios between groups should be interpreted with caution as well. Due to the sample sizes, it is reasonable to expect that there would be statistically significant results identified between the slopes of the lines. Still, the fact remains that the significant predictors of graduation or persistence were varied among the three racial groups indicating that theories of student engagement and involvement and the definitions used to define these constructs should be evaluated and adjusted to better explain their relationship in student success for minority groups. In addition, although the effect sizes may be inflated, particularly for Latinos, the fact that the effect sizes are larger for academic preparation and sense of belonging indicates that more emphasis should be placed on these two variables when redefining theories of student success for this population.

Another limitation of this study rests with the individuals who chose to respond to the survey. Students who responded could be more satisfied and engaged than those who did not respond which creates response bias. Additionally, this study only investigated Latinos at public institutions in North Carolina. Although the approach of this study provides very useful information for institutions in the state who are serving a new population of students, it does limit the generalizability of the study.

Although there are limitations to generalizability, state's with similar demographics to North Carolina may be able to apply the findings of this study to their own contexts.

Implications for Practice

The findings that academic preparation, sense of belonging, satisfaction with advising relationship, and satisfaction with financial guidance are significant predictors of persistence or completion for Latino students has several practical implications for practice. Specifically, academic advisors, financial aid, student accounts, and registrar staff should receive additional training and education related to their integral role in student success and retention. Advisors should also be well versed in academic requirements for specific majors and aligning transfer credit with degree pathways. Financial aid and student accounts staff should ensure that they are sharing accurate and complete information with families and students. They should be made aware that many first generation college students and families are unfamiliar with financial aid policies and procedures and therefore may require additional assistance or information to ensure they understand all of the aid options available to them.

In recent years, one of the recurring best practices from Hispanic Serving Institutions is engagement of the whole family. Engaging the whole family in the college experience raises family members' awareness of expectations of students and exposes families to the culture and processes present at the institution. Increasing awareness among family is extremely important since research has found that family and social support play a key role in Latino student success (Hurtado & Carter, 1997; Villenas & Deyhle, 1999). As families, particularly those where the student is the first to attend

college, gain a greater understanding and comfort with the college environment, they will be better equipped to support their students.

Although Latinos are a growing population in North Carolina, the proportion of enrollments is still rather small in the UNC System as compared to the other groups in this study, Whites and African Americans. It would stand to reason then that the lack of individuals on campus that share similar cultural values may make establishing oneself within the campus culture difficult. The finding that sense of belonging is a significant predictor of persistence or graduation for Latino students signals that institutions should ensure there are opportunities available for Latino students to connect with one another-and perhaps external communities-to successfully allow students to establish affiliations among multiple groups. Sense of belonging is fostered through more than peer interaction; it is fostered through all interactions and experiences on campus. Therefore, faculty and staff must recognize that the connections they build with students are also important and are key determinants in whether students are able to establish a sense of belonging with the institution. The importance of these connections is indicative of the finding that satisfaction with the advising relationship and financial guidance were statistically significant predictors of graduation or persistence.

The finding that satisfaction with financial guidance was a significant predictor of completion and persistence indicates that when students and their families receive the financial guidance support they need, the anxiety and barrier created by finances is either removed or lessened allowing students and their families to more easily engage with the institution.

This literature suggests that incorporating families and encouraging the maintenance of community ties is important to Latino student success. However, it is also in contradiction to other studies that have found this sort of engagement to be important for Latino student success.

Implications for Theory

Theories of engagement and involvement should be adjusted to account for the varied ways students from different cultural backgrounds engage with the institution. Highlighting this need are the findings that different racial/ethnic groups had different statistically significant predictors within the model and their effects varied by racial group. The demographic of college students is changing. Students are older, more likely to be minority, first-generation students, and work full or part-time. In North Carolina this is no different and, in fact, Latinos are a growing population outpacing growth among every other group. Theories of student success must reflect the "new normal" in terms of student population (older, more racially diverse, lower socio-economic status, working part or full time) and the fact that the majority of students are not engaging in the ways they did when these theories were first constructed. Definitions of traditional engagement constructs should be adjusted for non-traditional students. In part, this re-defining must recognize the importance of home communities to student success—particularly for collectively oriented cultures. As students transition, the most important factors related to retention may not be connecting to peers and extra-curricular or co-curricular activities but to supportive staff, faculty and family. Likewise, the process of engagement may evolve and change as the student moves through their academic career.

At later stages, peer engagement, co-curricular engagement and other, more traditional, forms of engagement may become more important.

Researchers should incorporate the recommendations of Nora, Crisp, and Matthews (2011) who offer a reconceptualization of the model underlying the Community College Survey of Student Engagement (CCSSE). The CCSSE is relevant in the context of minority students who, like community college students, do not engage with the institution in the same ways as traditional aged or white students. Nora et al. (2011) argues that actions and behaviors measured by the CCSSE do not occur in a vacuum. An individual's chosen response is based on a specific set of conditions, ways of thinking, practices, and policies. These decisions have an impact on success in college. Therefore, the model they propose incorporates behavioral and psychosocial perspectives underlying the nature of student engagement. Behavioral aspects of engagement are those action or activities that a student is involved in such as joining in discussions, engaging in debates, passively sitting in a classroom utilizing a collaborative learning approach, and interacting with faculty and students. The psychosocial aspect represents students' mental states such as academic self-efficacy and increasing satisfaction with educational experiences. These beliefs and perceptions enhance the level of engagement in the behavioral component…if the activity is not perceived as beneficial to the student in some form or fashion, the student becomes disengagement mentally (distracted) and, ultimately, physically (dropping out)" (Nora et al., 2011, p. 126).

The inclusion of both behavioral and psychosocial aspects of engagement provides a more holistic view of the student experience as well as a more robust

understanding of student success and recognizes the many institutional factors and actors that contribute to a student's ability to engage, such as advisors, counselors, and other integral support staff.

Relatedly, Dowd, Sawatzky, & Korn (2011) argue that student development theories fail to represent experiences of underrepresented students and that campuses impose constraints on minoritized students through racially biased practices and assessments that do not measure these biased practices. Without a clear understanding of the racial climate on a campus, college administrators cannot make well-informed decisions about how to change their institutional climate. Dowd et. al's (2011) recommendation is to include measures of intercultural effort that account for the effort required to counteract marginalizing experiences or environments. These measures should include intercultural sensitivity, intercultural adaptability, and discriminatory belief systems.

Recommendations for Future Research

Future research should continue to engage in the exploration of racial differences utilizing methodological approaches that support a critical perspective. Without the examination of processes and experiences in the context within which they take place, nuances cannot be explored. Five tenets form the foundation of critical theory; 1) seek to understand the experiences of individuals and groups in relation to cultural constraints and societal prescriptions, 2) recognize the role of power in structuring human subjectivity, 3) acknowledge the credibility of cultural difference, 4) investigate the ways science and knowledge are defined and changed, 5) extend theory into action (Tierney and Rhoads, 1993). These five tenets inform the critical quantitative research approach

which seeks to challenge and illuminate conflict which develops critique through quantitative methods (Stage 2007). The present study did two things, first it questioned the validity of the process of engagement, involvement, and sense of belonging for Latino students and secondly, it challenged the quantitative approach to investigate the research questions. The challenge to theory has already been discussed and likewise the case has been made for the methodological approach to this study. In extension, future researchers interested in student success should also adopt a critical quantitative approach to more fully explore the nuances of minoritized student experiences. As noted by Baez (2007), mainstream research practices are generally implicated in the reproduction of systems of class, race, and gender oppression. He urges researchers to be self-critical, attentive to the privilege and authority being a researcher bears, and the ways in which we authorize some to speak and the silence of others. To do this, researchers must engage in critical reflection of their own practices which give value to some interpretations over others.

One way to reflect on research practices is to approach the research differently to widen the scope of interpretation. Carter and Hurtado (2007) recommend utilizing a comparative study to focus on a specific group. By conducting analysis on the entire population and on a specific population of interest, researchers can uncover whether unique models are required and can provide further explanation about the differences observed. A similar approach is studying single populations of interest in relation to the normalized literature to identify differences between the two. Alcantar (2014) recommends approaching research related to engagement by applying the Multicontextual Model for Diverse Learning Environments (DLE Model). This model

takes a holistic approach allowing the researcher to explore interactions between institutional elements (faculty, staff, and peers), students' multiple social identities, and external factors (such as communities and outside obligations). A more holistic approach recognizes the intersections between internal and external factors expanding the scope of the context that theories are applied and tested. These types of approaches address the need to have context-specific information and include deeper investigations within subpopulations of larger groups. For instance, the large categories of race do not account for the heterogeneity present in these groups. Future research should seek to unpack these nuances for Latinos by identifying country of heritage or origin. This same approach can be applied to other groups such as Asians or Pacific Islanders.

More robust statistical analysis could substantiate the claims made in this study. Structural Equation Modeling (SEM) and the inclusion of interaction effects would allow for more sophisticated segmenting of variables by racial/ethnic group. SEM would also allow the researcher to control for institutional type which was not accounted for in this study due to the sparseness of data within cells by institutional type. Whatever the statistical method, examining the nuance of experience and process by exclusively focusing on minority groups, instead of simply using race as an independent variable is valuable and necessary. Confirmatory Factor Analysis would verify and validate the constructs identified in this research study which could inform the creation of a more refined tool to measure student engagement within the UNC System.

Additionally, the UNC System may wish to explore whether the way students engage with institutions changes over time. Respondents to the UNC Sophomore Survey could be matched to their responses on the Senior Survey and models investigated to see

whether the type of engagement has changed and whether the constructs predictive of graduation have changed since Sophomore year.

Conclusion

The theories of student engagement, student involvement, and sense of belonging are still relevant for today's students. The changes in demographic profiles of college students necessitate a reimagining of these theories. Degree attainment goals, indeed the growing need for more citizens to have a quality post-secondary credential urges researchers to continue research to better understand the contributing factors to student success. Solving the mystery will not be easy due to the myriad variables involved in determining retention, persistence, and stop-out or drop-out. However, there are successful practices and key variables that contribute to student success. We owe it to our students to continue to investigate these issues to better understand how institutions can better serve students in relevant ways.

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Appendix A

2013 UNC Sophomore Survey

Section A: Academic Environment and Advising

1. Please rate your overall satisfaction with instructors on your campus for each of the following: (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied)

a. Their ability to motivate me to do my best

b. How carefully they explain the expectations of student performance in the course

c. How well they explain course material

d. The extent to which they encourage class discussion

e. How effectively they use instructional technology in teaching and learning activities

f. How quickly they provide feedback on my work

g. The helpfulness of their feedback on my work

2. Please rate the extent to which you agree or disagree with each of the following: (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree)

a. I consider what I have been learning in my classes valuable

b. My experiences at this institution [or INSTITUTION NAME] have stimulated interest in an intended field of study

c. I am able to freely explore academic interests at this institution [or INSTITUTION NAME]

d. Students at this institution [or INSTITUTION NAME] are encouraged to ask questions

e. Students at this institution [or INSTITUTION NAME] are given meaningful answers to the questions they ask

f. At this institution [or INSTITUTION NAME],students are invited to share their ideas and knowledge

3. How many of your classes at this institution [or INSTITUTION NAME] do you feel have been too large for you to learn effectively?

- None
- One
- Two
- Three
- Four or more

4. In how many of your classes at this institution [or INSTITUTION NAME] have you had difficulty understanding the spoken English of an instructor?

- None
- One
- Two
- Three
- Four or more

5. Which of the following choices best reflects your primary source for academic advising during your sophomore year? (select only one response option)

- Faculty member in my department
- Professional advisor in my department or college
- Centralized or campus-wide advising service (with personal contact)

- University provided [or INSTITUTION NAME] web-based advising site [i.e., LOCAL NAME] (no personal contact)
- Other (describe _____)

6. Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance. (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied)

a. Accessibility of my primary advisor

b. Amount of time I am given during advising sessions

c. Advisor's concern with my academic success

d. Advisor keeping me informed about my academic progress

e. Advisor's knowledge about university rules and procedures

f. Advisor providing me with the information I need about academic courses and programs

g. Advisor's knowledge about the requirements for my current major or major of interest

h. Advisor's knowledge about general education and other degree requirements

i. Advisor knowing whom to contact to help me with non-academic problems

j. Advisor's encouragement of participation in educational enrichment opportunities (e.g., internship, service learning, clubs related to my major)

Section B: Help Outside the Classroom

Please rate your satisfaction with each of the following.

(very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied, don't know/not applicable)

1. Academic Assistance / Tutoring

    a. Availability of academic assistance or tutoring services on campus

    b. Academic assistance or tutoring services you have received on campus for help with:

        1) Writing

        2) Reading

        3) Mathematics

        4) Science

        5) Foreign language

        6) Study skills

2. This item is dropped from UNC 2013 Sophomore Survey.

3. Library

    a. Helpfulness of staff

    b. Space for individual student work

    c. Space for group work

    d. Training/instruction for using library and information resources

    e. Access to databases and resources

    f. Access to online library resources

    g. Hours of operation

    h. Effectiveness of library services in improving my learning experience

4. Career Services

    a. Helpfulness of staff

    b. Information on internships, co-ops, and other career-related experiences

c. Access to employment opportunities (e.g., career fairs, interviews, job listings, etc.)

d. Help in preparing for interviews, resumes, etc.

e. Availability of career resources online

5. Information Technology Services

a. Training on the technology that I need to use

b. Assistance from the helpdesk (i.e., OR e.g., LOCAL EXAMPLE, BRAND NAME) in solving my technology problems

c. Hours of operation for university computer labs

d. Availability of equipment and software in university computer labs to meet my needs

e. Availability of wireless access on campus

f. Online course management system(s) used in my classes (i.e., OR e.g., LOCAL EXAMPLE, BRAND NAME)

g. Effectiveness of information technology in improving my learning experience

Section C: Other Offices That Serve You

These next questions ask for your opinion first about the services provided by various other offices on campus, and then about the staff associated with those offices.

1. First, please rate your satisfaction with the services provided by the following offices on campus:(very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied, no experience to judge)

a. Financial Aid: Application/award process

b. Financial Aid: Disbursement process

c. Cashier/Student Accounts/Billing Office

d. Registrar's Office

e. Bookstore

f. Health Services

g. Counseling (personal, interpersonal, or psychological)

h. Housing and Residence Life

i. Campus recreation

j. Dining Services

k. On-campus shuttle/transportation services (i.e., LOCAL SERVICE NAME)

l. Campus Police Department

m. Parking

2. Now please rate the quality of the staff associated with the following campus offices: (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied, no experience to judge)

a. Financial Aid: Application/award process

b. Financial Aid: Disbursement process

c. Cashier/Student Accounts/Billing Office

d. Registrar's Office

e. Bookstore

f. Health Services

g. Counseling (personal, interpersonal, or psychological)

h. Housing and Residence Life

i. Campus recreation

j. Dining Services

k. On-campus shuttle/transportation services (i.e., LOCAL SERVICE NAME)

l. Campus Police Department

m. Parking

3. How satisfied are you with the ease with which you can navigate through the following online services? (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied, don't know/not applicable)

a. Billing system (i.e., LOCAL SYSTEM NAME)

b. Financial aid (i.e., LOCAL SYSTEM NAME)

c. Course registration system (i.e., LOCAL SYSTEM NAME)

Section D: Campus Safety

In questions 1a through 1h, please consider "day/early evening" to be 7:00am to 8:00pm, and "night" to be after 8:00pm and before 7:00am.

1. In general, how safe do you feel: (very safe, pretty safe, not very safe, not at all safe, not applicable – never there)

a. In campus residence halls during the day/early evening

b. In campus residence halls at night

c. Using the parking lots, garages, and/or decks on campus during the day/early evening

d. Using the parking lots, garages, and/or decks on campus at night

e. In non-residence buildings on campus during the day/early evening (e.g., classrooms, libraries, etc.)

f. In non-residence buildings on campus at night (e.g., classrooms, libraries, etc.)

g. Outside on the grounds of the campus during the day/early evening

h. Outside on the grounds of the campus at night

2. How satisfied are you with: (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied)

a. Availability of public information about crimes on campus

b. Availability of information about crime prevention and safety on campus

3. If you observed someone on campus behaving suspiciously or in a threatening manner, would you know how to report it?

Yes

No

4. If you observed someone on campus behaving suspiciously or in a threatening manner, how likely would you be to report it to a campus authority?

- Very likely
- Somewhat likely
- Somewhat unlikely
- Very unlikely

Section E: On- and Off-Campus Activities

1. About how often during the typical year do you attend or participate in each of the following campus activities? (1 or more times weekly, 2–3 times a month, once a month, 2-3 times a semester, 1-2 times a year, never)

a. Workshops, seminars, speakers, etc. outside of class

b. University sponsored art events (e.g., plays, musical performances, exhibits)

c. Multicultural/diversity events/programs

d. Community service/volunteer work

e. Intramural activities (including club and recreational sports)

f. Co-curricular activities (e.g., University-sponsored student organization, student government, Greek life)

g. Intercollegiate athletic events

2. Please rate your overall satisfaction with: (very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied)

a. Weekend activities on campus for students

b. The ease with which I can get involved in campus organizations

c. Opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds

d. Opportunities on campus to develop leadership skills

Section F: Conclusions

1. To what extent do you agree or disagree with each of the following: (Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree)

a. I am confident that I made the right decision to attend this university [or INSTITUTION NAME]

b. I believe I was academically prepared to attend this institution [or INSTITUTION NAME]

c. I feel I belong at this institution [or INSTITUTION NAME]

d. I will have the financial resources I need to finish college

2. While school has been in session this academic year, about how many hours per week have you spent working for pay on campus?

- 0
- 1-5
- 6-10
- 11-15
- 16-20
- 21-25
- 26-30
- More than 30

3. While school has been in session this academic year, about how many hours per week have you spent working for pay off campus?

- 0
- 1-5
- 6-10
- 11-15
- 16-20
- 21-25
- 26-30
- More than 30

4. How does your job affect your school work? (select only one response option)

- I do not have a job.
- My job does not interfere with my school work.
- My job takes some time away from my school work.
- My job takes a lot of time away from my school work.

5. Which of the following best describes your current educational plans? (select only one response option)

- I expect to be continuously enrolled at this university [or INSTITUTION NAME] until I graduate (including co-ops, internships, student teaching, etc.).
- I expect to graduate from this university [or INSTITUTION NAME], but I plan to take some time off between semesters.
- I expect to transfer to another college or university in order to pursue my desired major.
- I expect to transfer to another college or university for reasons unrelated to the major I want to pursue (i.e., financial, personal, social, etc.).
- I do not expect to complete a degree at this university [or INSTITUTION NAME] or at any other college or university in the foreseeable future
- I am not sure about my educational plans at this point.

Appendix B

Descriptive Statistics Tables for Survey Items and Academic Preparation

Table B1

Descriptive Statistics for item A1a: Satisfaction with instructor's ability to motivate me to do my best

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5732	3.86	.794	1.00	5.00
Imputed Values	1	23	3.94	.850	2.13	5.64
	2	23	4.12	.752	2.78	6.09
	3	23	3.97	.724	2.48	5.68
	4	23	3.81	.880	2.35	5.07
	5	23	3.94	.823	2.68	5.91
Complete Data After Imputation	1	5755	3.86	.794	1.00	5.64
	2	5755	3.86	.794	1.00	6.09
	3	5755	3.86	.794	1.00	5.68
	4	5755	3.86	.794	1.00	5.07
	5	5755	3.86	.794	1.00	5.91

Table B2

Descriptive Statistics for item A1b: Satisfaction with how carefully they [instructors] explain the expectations of student performance in the course

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5724	3.96	.766	1.00	5.00
Imputed Values	1	31	3.89	.829	1.15	5.33
	2	31	3.95	.760	2.08	5.27
	3	31	4.10	.735	2.42	5.58
	4	31	3.75	.847	1.79	6.01
	5	31	3.91	.715	2.42	5.23
Complete Data After Imputation	1	5755	3.96	.766	1.00	5.33
	2	5755	3.96	.766	1.00	5.27
	3	5755	3.96	.766	1.00	5.58
	4	5755	3.96	.766	1.00	6.01
	5	5755	3.96	.766	1.00	5.23

Table B3

Descriptive Statistics for A1c: Satisfaction with how well they [instructors] explain course material

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5721	3.87	.773	1.00	5.00
Imputed Values	1	34	3.70	.796	1.47	5.07
	2	34	3.84	.609	2.12	4.87
	3	34	3.86	.762	1.99	5.61
	4	34	3.84	1.032	1.95	5.92
	5	34	3.57	.704	2.34	5.13
Complete Data After Imputation	1	5755	3.87	.773	1.00	5.07
	2	5755	3.87	.772	1.00	5.00
	3	5755	3.87	.772	1.00	5.61
	4	5755	3.87	.774	1.00	5.92
	5	5755	3.87	.772	1.00	5.13

Table B4

Descriptive Statistics for A1d: Satisfaction with the extent to which they [instructors] encourage class discussion

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5714	3.86	.833	1.00	5.00
Imputed Values	1	41	3.69	1.110	.49	5.65
	2	41	3.79	.920	1.78	5.90
	3	41	3.75	.887	1.72	5.31
	4	41	3.77	.959	1.86	5.13
	5	41	3.92	.922	1.66	5.82
Complete Data After Imputation	1	5755	3.86	.835	.49	5.65
	2	5755	3.86	.833	1.00	5.90
	3	5755	3.86	.833	1.00	5.31
	4	5755	3.86	.833	1.00	5.13
	5	5755	3.86	.833	1.00	5.82

Table B5

Descriptive Statistics for A1e: Satisfaction with how well they [instructors] use instructional technology in teaching and learning activities

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5721	3.93	.818	1.00	5.00
Imputed Values	1	34	4.04	.806	1.54	5.37
	2	34	3.91	.721	2.58	5.72
	3	34	3.76	.806	2.55	6.05
	4	34	3.89	.879	2.12	5.49
	5	34	3.95	.800	2.60	5.75
Complete Data After Imputation	1	5755	3.93	.818	1.00	5.37
	2	5755	3.93	.817	1.00	5.72
	3	5755	3.93	.818	1.00	6.05
	4	5755	3.93	.818	1.00	5.49
	5	5755	3.93	.818	1.00	5.75

Table B6

Descriptive Statistics A1f: Satisfaction with how quickly they [instructors] provide feedback on my work

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5729	3.60	.974	1.00	5.00
Imputed Values	1	26	3.68	1.079	1.75	5.49
	2	26	3.68	.870	2.54	5.69
	3	26	3.73	1.006	2.33	6.29
	4	26	3.64	.904	1.94	5.81
	5	26	3.36	.920	1.07	4.60
Complete Data After Imputation	1	5755	3.60	.974	1.00	5.49
	2	5755	3.60	.973	1.00	5.69
	3	5755	3.60	.974	1.00	6.29
	4	5755	3.60	.973	1.00	5.81
	5	5755	3.60	.973	1.00	5.00

Table B7

Descriptive Statistics A1g: Satisfaction with the helpfulness of their [instructors'] feedback on my work

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5709	3.73	.918	1.00	5.00
Imputed Values	1	46	3.56	1.040	.80	5.46
	2	46	3.65	.937	1.88	5.20
	3	46	3.70	.916	2.24	5.43
	4	46	3.72	1.042	1.51	6.47
	5	46	3.69	.748	1.65	4.82
Complete Data After Imputation	1	5755	3.73	.919	.80	5.46
	2	5755	3.73	.918	1.00	5.20
	3	5755	3.73	.918	1.00	5.43
	4	5755	3.73	.919	1.00	6.47
	5	5755	3.73	.917	1.00	5.00

Table B8

Descriptive Statistics A2a: Extent to which you agree or disagree: I consider what I've been learning in my classes valuable

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5719	4.06	.808	1.00	5.00
Imputed Values	1	36	4.19	.804	2.20	5.65
	2	36	4.10	.826	2.07	5.77
	3	36	4.01	.772	2.82	5.89
	4	36	4.21	.807	2.38	6.16
	5	36	4.10	.882	1.90	6.45
Complete Data After Imputation	1	5755	4.06	.808	1.00	5.65
	2	5755	4.06	.808	1.00	5.77
	3	5755	4.06	.808	1.00	5.89
	4	5755	4.06	.808	1.00	6.16
	5	5755	4.06	.809	1.00	6.45

Table B9

Descriptive Statistics for A2b: Extent to which you agree or disagree: My experiences at this institution have stimulated interest in an intended field of study

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5714	4.14	.873	1.00	5.00
Imputed Values	1	41	4.34	.914	1.72	6.56
	2	41	4.25	.850	2.29	5.75
	3	41	4.26	.754	2.60	5.92
	4	41	4.16	.963	1.86	6.05
	5	41	4.29	.889	2.64	6.06
Complete Data After Imputation	1	5755	4.14	.873	1.00	6.56
	2	5755	4.14	.873	1.00	5.75
	3	5755	4.14	.872	1.00	5.92
	4	5755	4.14	.874	1.00	6.05
	5	5755	4.14	.873	1.00	6.06

Table B10

Descriptive Statistics for A2c: Extent to which you agree or disagree: I'm able to freely explore academic interests at this institution

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5709	3.97	.950	1.00	5.00
Imputed Values	1	46	3.95	.885	2.36	6.00
	2	46	4.13	.864	2.19	5.97
	3	46	4.07	1.002	2.26	5.81
	4	46	4.06	.863	2.47	6.03
	5	46	4.15	.936	2.58	6.30
Complete Data After Imputation	1	5755	3.97	.949	1.00	6.00
	2	5755	3.97	.949	1.00	5.97
	3	5755	3.97	.950	1.00	5.81
	4	5755	3.97	.949	1.00	6.03
	5	5755	3.97	.949	1.00	6.30

Table B 11

Descriptive Statistics for A2d: Extent to which you agree or disagree: Students at this institution are encouraged to ask questions

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5711	4.08	.803	1.00	5.00
Imputed Values	1	44	4.14	.857	2.25	6.22
	2	44	4.12	.862	2.56	5.46
	3	44	4.12	.889	2.32	6.02
	4	44	4.19	.827	2.88	5.78
	5	44	3.99	.807	2.59	5.51
Complete Data After Imputation	1	5755	4.08	.803	1.00	6.22
	2	5755	4.08	.803	1.00	5.46
	3	5755	4.08	.804	1.00	6.02
	4	5755	4.08	.803	1.00	5.78
	5	5755	4.08	.803	1.00	5.51

Table B 12

Descriptive Statistics for A2e: Extent to which I agree or disagree: Students at this institution are given meaningful answers to the questions they ask

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5716	3.88	.856	1.00	5.00
Imputed Values	1	39	3.81	.841	1.32	5.34
	2	39	3.99	.925	2.05	6.21
	3	39	4.12	.991	1.00	6.26
	4	39	4.13	.873	2.42	5.90
	5	39	4.14	.910	2.13	5.45
Complete Data After Imputation	1	5755	3.88	.855	1.00	5.34
	2	5755	3.88	.856	1.00	6.21
	3	5755	3.88	.857	1.00	6.26
	4	5755	3.88	.856	1.00	5.90
	5	5755	3.88	.856	1.00	5.45

Table B 13

Descriptive Statistics A2f: Extent to which you agree or disagree: At this institution, students are invited to share their ideas and knowledge

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5695	4.08	.795	1.00	5.00
Imputed Values	1	60	4.02	.762	2.34	5.57
	2	60	4.24	.763	2.45	5.67
	3	60	4.23	.741	2.62	6.31
	4	60	4.14	.757	2.19	5.97
	5	60	4.04	.631	2.26	5.38
Complete Data After	1	5755	4.07	.795	1.00	5.57
Imputation	2	5755	4.08	.795	1.00	5.67
	3	5755	4.08	.795	1.00	6.31
	4	5755	4.08	.795	1.00	5.97
	5	5755	4.07	.794	1.00	5.38

Table B 14

Descriptive Statistics for Item A3: How many of your classes at this institution do you feel have been too large for you to learn effectively?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5704	1.31	1.272	.00	4.00
Imputed Values	1	51	1.46	1.496	-1.74	4.30
	2	51	1.37	1.263	-.97	4.27
	3	51	1.62	1.260	-1.50	3.84
	4	51	1.21	1.311	-1.54	3.92
	5	51	1.49	1.234	-1.48	4.73
Complete Data After	1	5755	1.31	1.274	-1.74	4.30
Imputation	2	5755	1.31	1.272	-.97	4.27
	3	5755	1.31	1.272	-1.50	4.00
	4	5755	1.31	1.273	-1.54	4.00
	5	5755	1.31	1.272	-1.48	4.73

Table B 15

Descriptive Statistics for Item A4: In how many of your classes have you had difficulty understanding the spoken English of an instructor?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5704	1.07	1.094	.00	4.00
Imputed Values	1	51	1.18	1.130	-1.03	3.46
	2	51	1.11	.964	-1.08	3.27
	3	51	1.06	1.059	-.79	3.72
	4	51	1.14	1.024	-1.52	4.15
	5	51	1.20	.974	-.81	3.25
Complete Data After Imputation	1	5755	1.07	1.094	-1.03	4.00
	2	5755	1.07	1.093	-1.08	4.00
	3	5755	1.07	1.093	-.79	4.00
	4	5755	1.07	1.093	-1.52	4.15
	5	5755	1.07	1.093	-.81	4.00

Table B 16

Descriptive Statistics A5: Which of the following best reflects your primary source for academic advising during your sophomore year?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5642	2.24	1.111	1.00	5.00
Imputed Values	1	113	1.97	1.180	-1.13	4.91
	2	113	2.05	1.053	-.20	4.85
	3	113	2.05	1.053	-.84	4.73
	4	113	1.99	1.117	-.90	4.54
	5	113	2.06	1.146	-1.08	4.79
Complete Data After Imputation	1	5755	2.23	1.113	-1.13	5.00
	2	5755	2.24	1.110	-.20	5.00
	3	5755	2.24	1.110	-.84	5.00
	4	5755	2.23	1.111	-.90	5.00
	5	5755	2.24	1.112	-1.08	5.00

Table B 17

Descriptive Statistics A6a: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Accessibility of my primary advisor

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5675	4.03	1.015	1.00	5.00
Imputed Values	1	80	3.77	.893	1.86	6.28
	2	80	3.85	.901	1.72	5.55
	3	80	3.98	1.036	1.08	5.97
	4	80	4.08	.820	2.27	6.12
	5	80	3.87	.730	1.98	5.73
Complete Data After Imputation	1	5755	4.03	1.014	1.00	6.28
	2	5755	4.03	1.014	1.00	5.55
	3	5755	4.03	1.015	1.00	5.97
	4	5755	4.03	1.013	1.00	6.12
	5	5755	4.03	1.012	1.00	5.73

Table B 18

Descriptive Statistics A6b: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Amount of time I am given during advising sessions

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5666	4.13	.911	1.00	5.00
Imputed Values	1	89	3.96	.833	1.78	5.70
	2	89	3.96	.981	1.83	6.09
	3	89	4.23	.872	1.90	5.72
	4	89	4.07	.865	1.36	5.91
	5	89	4.00	.807	1.93	6.01
Complete Data After Imputation	1	5755	4.13	.910	1.00	5.70
	2	5755	4.13	.912	1.00	6.09
	3	5755	4.13	.910	1.00	5.72
	4	5755	4.13	.910	1.00	5.91
	5	5755	4.13	.909	1.00	6.01

Table B 19 *Descriptive Statistics A6c: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor's concern with my academic success*

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5661	4.03	1.025	1.00	5.00
Imputed Values	1	94	3.86	.892	1.96	6.48
	2	94	3.89	.920	1.78	6.43
	3	94	4.02	.906	1.13	5.86
	4	94	3.97	.792	1.75	5.64
	5	94	3.89	.791	1.93	5.57
Complete Data After Imputation	1	5755	4.02	1.023	1.00	6.48
	2	5755	4.02	1.024	1.00	6.43
	3	5755	4.03	1.023	1.00	5.86
	4	5755	4.03	1.022	1.00	5.64
	5	5755	4.02	1.022	1.00	5.57

Table B 20

Descriptive Statistics A6d: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance: Advisor's concern with my academic progress

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5660	3.82	1.112	1.00	5.00
Imputed Values	1	95	3.77	1.021	1.09	6.37
	2	95	3.76	1.178	.66	6.54
	3	95	3.79	1.021	.99	6.73
	4	95	3.88	.929	.99	5.55
	5	95	3.64	.924	1.32	5.73
Complete Data After Imputation	1	5755	3.82	1.110	1.00	6.37
	2	5755	3.82	1.113	.66	6.54
	3	5755	3.82	1.110	.99	6.73
	4	5755	3.82	1.109	.99	5.55
	5	5755	3.81	1.109	1.00	5.73

Table B 21

Descriptive Statistics: A6e: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance. Advisor's knowledge about university rules and procedures

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5635	4.07	.952	1.00	5.00
Imputed Values	1	120	4.00	.901	1.08	6.70
	2	120	4.04	.998	1.00	6.07
	3	120	4.07	.900	1.78	6.06
	4	120	4.06	.856	1.93	6.23
	5	120	3.94	.861	1.23	5.82
Complete Data After Imputation	1	5755	4.07	.951	1.00	6.70
	2	5755	4.07	.953	1.00	6.07
	3	5755	4.07	.951	1.00	6.06
	4	5755	4.07	.950	1.00	6.23
	5	5755	4.07	.950	1.00	5.82

Table B 22

Descriptive Statistics: A6f: Please rate your level of satisfaction with the person or office serving as your designated primary source for academic advising/guidance. Advisor's providing me with the information I need about academic courses and programs

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5656	4.03	1.042	1.00	5.00
Imputed Values	1	99	3.83	.874	1.70	5.93
	2	99	3.88	1.028	1.74	6.05
	3	99	3.94	.926	1.45	6.07
	4	99	4.00	.979	1.04	6.13
	5	99	3.91	.807	1.74	5.82
Complete Data After Imputation	1	5755	4.03	1.039	1.00	5.93
	2	5755	4.03	1.042	1.00	6.05
	3	5755	4.03	1.040	1.00	6.07
	4	5755	4.03	1.041	1.00	6.13
	5	5755	4.03	1.038	1.00	5.82

Table B 23

Descriptive Statistics: A6g: Please rate your level of satisfaction with the person or office serving as your primary source of advising/guidance. Advisor's knowledge about the requirements for my current major of interest.

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5654	4.16	.966	1.00	5.00
Imputed Values	1	101	4.00	.907	1.78	6.10
	2	101	4.06	.991	1.42	6.22
	3	101	4.03	.982	1.65	6.18
	4	101	4.11	.951	1.12	6.19
	5	101	4.06	.815	1.87	5.72
Complete Data After Imputation	1	5755	4.16	.965	1.00	6.10
	2	5755	4.16	.966	1.00	6.22
	3	5755	4.16	.966	1.00	6.18
	4	5755	4.16	.965	1.00	6.19
	5	5755	4.16	.963	1.00	5.72

Table B 24

Descriptive Statistics: A6h: Please rate your level of satisfaction with the person or office serving as your primary source of advising/guidance. Advisor's knowledge about general education and other degree requirements.

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5645	4.08	.951	1.00	5.00
Imputed Values	1	110	3.94	.859	1.37	6.17
	2	110	3.88	1.034	.10	6.84
	3	110	3.97	.921	1.77	5.55
	4	110	4.02	.872	1.62	5.77
	5	110	3.85	.767	2.04	5.97
Complete Data After Imputation	1	5755	4.08	.949	1.00	6.17
	2	5755	4.07	.953	.10	6.84
	3	5755	4.08	.950	1.00	5.55
	4	5755	4.08	.949	1.00	5.77
	5	5755	4.07	.948	1.00	5.97

Table B 25

Descriptive Statistics: A6i: Please rate your level of satisfaction with the person or office serving as your primary source of advising/guidance. Advisor knowing whom to contact to help me with non-academic problems

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5552	3.92	.989	1.00	5.00
Imputed Values	1	203	3.77	.898	1.30	6.11
	2	203	3.81	.916	.82	5.72
	3	203	3.85	.887	.93	5.82
	4	203	3.88	.932	1.09	6.31
	5	203	3.82	.832	.99	5.68
Complete Data After Imputation	1	5755	3.91	.986	1.00	6.11
	2	5755	3.91	.986	.82	5.72
	3	5755	3.91	.985	.93	5.82
	4	5755	3.91	.987	1.00	6.31
	5	5755	3.91	.984	.99	5.68

Table B 26

Descriptive Statistics: A6j: Please rate your level of satisfaction with the person or office serving as your primary source of advising/guidance. Advisor's encouragement of participation in educational enrichment opportunities.

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5600	3.82	1.086	1.00	5.00
Imputed Values	1	155	3.75	1.005	.69	6.32
	2	155	3.86	.976	1.16	6.25
	3	155	3.70	1.010	1.29	6.65
	4	155	3.75	.919	.07	6.03
	5	155	3.73	.919	1.65	6.25
Complete Data After Imputation	1	5755	3.82	1.084	.69	6.32
	2	5755	3.82	1.083	1.00	6.25
	3	5755	3.82	1.084	1.00	6.65
	4	5755	3.82	1.082	.07	6.03
	5	5755	3.82	1.082	1.00	6.25

Table B 27

Descriptive Statistics: B1a: Please rate your level of satisfaction with each of the following-Availability of academic assistance or tutoring services on campus

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5378	3.34	1.673	.00	5.00
Imputed Values	1	377	3.42	1.658	-.43	9.71
	2	377	3.50	1.546	-1.60	9.28
	3	377	3.48	1.676	-1.03	7.53
	4	377	3.55	1.647	-1.63	8.25
	5	377	3.40	1.628	-1.80	7.62
Complete Data After Imputation	1	5755	3.35	1.672	-.43	9.71
	2	5755	3.35	1.665	-1.60	9.28
	3	5755	3.35	1.673	-1.03	7.53
	4	5755	3.36	1.672	-1.63	8.25
	5	5755	3.35	1.670	-1.80	7.62

Table B 28

Descriptive Statistics: B1b1: Please rate your level of satisfaction with each of the following-Academic assistance or tutoring services you have received on campus for help with writing

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5419	2.23	2.021	.00	5.00
Imputed Values	1	336	2.54	1.903	-3.96	8.23
	2	336	2.74	1.808	-2.48	9.19
	3	336	2.41	1.927	-2.93	8.24
	4	336	2.73	1.809	-2.91	7.94
	5	336	2.69	1.856	-3.42	7.03
Complete Data After Imputation	1	5755	2.25	2.015	-3.96	8.23
	2	5755	2.26	2.012	-2.48	9.19
	3	5755	2.24	2.015	-2.93	8.24
	4	5755	2.26	2.012	-2.91	7.94
	5	5755	2.26	2.014	-3.42	7.03

Table B 29

Descriptive Statistics: B1b2: Please rate your level of satisfaction with each of the following-Academic assistance or tutoring services you have received on campus for help with reading

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5372	1.68	1.920	.00	5.00
Imputed Values	1	383	2.12	1.781	-3.24	7.72
	2	383	2.37	1.701	-2.87	6.37
	3	383	2.07	1.743	-2.52	7.52
	4	383	2.31	1.711	-3.49	7.75
	5	383	2.30	1.678	-2.86	6.67
Complete Data After Imputation	1	5755	1.71	1.914	-3.24	7.72
	2	5755	1.72	1.914	-2.87	6.37
	3	5755	1.71	1.911	-2.52	7.52
	4	5755	1.72	1.913	-3.49	7.75
	5	5755	1.72	1.911	-2.86	6.67

Table B 30

Descriptive Statistics: B1b3: Please rate your level of satisfaction with each of the following-Academic assistance or tutoring services you have received on campus for help with mathematics

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5441	2.25	2.000	.00	5.00
Imputed Values	1	314	2.44	1.952	-3.85	7.33
	2	314	2.58	1.762	-2.89	7.30
	3	314	2.36	1.956	-3.21	8.36
	4	314	2.73	1.840	-4.18	8.16
	5	314	2.52	1.753	-1.39	7.92
Complete Data After Imputation	1	5755	2.26	1.998	-3.85	7.33
	2	5755	2.27	1.989	-2.89	7.30
	3	5755	2.25	1.997	-3.21	8.36
	4	5755	2.27	1.994	-4.18	8.16
	5	5755	2.26	1.988	-1.39	7.92

Table B 31

Descriptive Statistics: B1b4: Please rate your level of satisfaction with each of the following-Academic assistance or tutoring services you have received on campus for help with science

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5432	2.23	1.993	.00	5.00
Imputed Values	1	323	2.59	1.915	-3.01	8.52
	2	323	2.65	1.940	-4.40	9.25
	3	323	2.35	1.839	-3.35	7.13
	4	323	2.76	1.738	-3.05	7.21
	5	323	2.58	1.819	-2.70	7.37
Complete Data After Imputation	1	5755	2.25	1.991	-3.01	8.52
	2	5755	2.25	1.993	-4.40	9.25
	3	5755	2.24	1.985	-3.35	7.13
	4	5755	2.26	1.983	-3.05	7.21
	5	5755	2.25	1.985	-2.70	7.37

Table B 32

Descriptive Statistics: B1b5: Please rate your level of satisfaction with each of the following-Academic assistance or tutoring services you have received on campus for help with foreign language

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5371	1.66	1.913	.00	5.00
Imputed Values	1	384	2.13	1.787	-3.23	7.09
	2	384	2.20	1.701	-3.08	6.24
	3	384	2.00	1.827	-3.76	7.73
	4	384	2.20	1.759	-3.79	6.55
	5	384	2.18	1.746	-2.78	6.31
Complete Data After Imputation	1	5755	1.70	1.908	-3.23	7.09
	2	5755	1.70	1.904	-3.08	6.24
	3	5755	1.69	1.909	-3.76	7.73
	4	5755	1.70	1.907	-3.79	6.55
	5	5755	1.70	1.906	-2.78	6.31

Table B 33

Descriptive Statistics: B1b6: Please rate your level of satisfaction with each of the following-Academic assistance or tutoring services you have received on campus for help with study skills

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5387	1.86	1.970	.00	5.00
Imputed Values	1	368	2.19	1.838	-2.20	9.04
	2	368	2.49	1.704	-2.90	6.13
	3	368	2.10	1.799	-2.39	6.99
	4	368	2.48	1.658	-2.20	8.39
	5	368	2.40	1.765	-2.74	6.84
Complete Data After Imputation	1	5755	1.88	1.963	-2.20	9.04
	2	5755	1.90	1.960	-2.90	6.13
	3	5755	1.87	1.960	-2.39	6.99
	4	5755	1.90	1.957	-2.20	8.39
	5	5755	1.89	1.961	-2.74	6.84

Table B 34

Descriptive Statistics: B3a: Please rate your level of satisfaction with each of the following- Helpfulness of Library staff

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5533	3.73	1.407	.00	5.00
Imputed Values	1	222	3.62	1.270	.71	6.53
	2	222	3.74	1.337	-.12	7.46
	3	222	3.58	1.339	-.02	7.73
	4	222	3.62	1.310	-.67	7.32
	5	222	3.61	1.366	-.73	7.64
Complete Data After Imputation	1	5755	3.73	1.402	.00	6.53
	2	5755	3.74	1.404	-.12	7.46
	3	5755	3.73	1.405	-.02	7.73
	4	5755	3.73	1.403	-.67	7.32
	5	5755	3.73	1.405	-.73	7.64

Table B 35

Descriptive Statistics: B3b: Please rate your level of satisfaction with each of the following-Space for individual student work in the library

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5527	3.74	1.273	.00	5.00
Imputed Values	1	228	3.57	1.201	.23	6.61
	2	228	3.57	1.123	.56	6.39
	3	228	3.58	1.229	-1.61	6.34
	4	228	3.61	1.138	-.27	6.98
	5	228	3.76	1.232	.69	6.54
Complete Data After Imputation	1	5755	3.74	1.270	.00	6.61
	2	5755	3.74	1.267	.00	6.39
	3	5755	3.74	1.271	-1.61	6.34
	4	5755	3.74	1.268	-.27	6.98
	5	5755	3.74	1.271	.00	6.54

Table B 36

Descriptive Statistics: B3c: Please rate your level of satisfaction with each of the following-Space for group work in the library

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5512	3.63	1.342	.00	5.00
Imputed Values	1	243	3.45	1.332	.40	7.10
	2	243	3.53	1.254	-.70	7.23
	3	243	3.35	1.359	-.01	7.09
	4	243	3.47	1.348	-.34	7.24
	5	243	3.60	1.270	.34	6.76
Complete Data After Imputation	1	5755	3.63	1.342	.00	7.10
	2	5755	3.63	1.339	-.70	7.23
	3	5755	3.62	1.344	-.01	7.09
	4	5755	3.63	1.343	-.34	7.24
	5	5755	3.63	1.339	.00	6.76

Table B 37

Descriptive Statistics: B3d: Please rate your level of satisfaction with each of the following-Training/instruction for using library and information resources

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5508	3.47	1.511	.00	5.00
Imputed Values	1	247	3.33	1.488	-.99	7.38
	2	247	3.50	1.595	-1.73	7.25
	3	247	3.35	1.434	-.69	7.45
	4	247	3.32	1.417	-2.37	8.12
	5	247	3.20	1.526	-1.07	7.41
Complete Data After Imputation	1	5755	3.46	1.510	-.99	7.38
	2	5755	3.47	1.515	-1.73	7.25
	3	5755	3.46	1.508	-.69	7.45
	4	5755	3.46	1.507	-2.37	8.12
	5	5755	3.46	1.513	-1.07	7.41

Table B 38

Descriptive Statistics: B3e: Please rate your level of satisfaction with each of the following-Access to databases and resources through the library

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5519	3.92	1.246	.00	5.00
Imputed Values	1	236	3.80	1.183	1.11	7.04
	2	236	4.00	1.222	.45	6.76
	3	236	3.87	1.108	.67	7.11
	4	236	3.87	1.070	.41	7.01
	5	236	3.83	1.149	-.14	6.57
Complete Data After Imputation	1	5755	3.92	1.244	.00	7.04
	2	5755	3.93	1.245	.00	6.76
	3	5755	3.92	1.241	.00	7.11
	4	5755	3.92	1.239	.00	7.01
	5	5755	3.92	1.242	-.14	6.57

Table B 39

Descriptive Statistics: B3f: Please rate your level of satisfaction with each of the following-Access to online library resources

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5529	4.01	1.171	.00	5.00
Imputed Values	1	226	3.92	1.107	1.33	6.41
	2	226	3.97	1.112	.23	6.68
	3	226	3.96	1.019	1.35	7.13
	4	226	3.98	1.077	1.38	7.16
	5	226	3.94	1.114	.32	6.75
Complete Data After Imputation	1	5755	4.00	1.169	.00	6.41
	2	5755	4.00	1.169	.00	6.68
	3	5755	4.00	1.165	.00	7.13
	4	5755	4.00	1.167	.00	7.16
	5	5755	4.00	1.169	.00	6.75

Table B 40

Descriptive Statistics: B3g: Please rate your level of satisfaction with each of the following-Library hours of operation

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5522	3.92	1.242	.00	5.00
Imputed Values	1	233	3.77	1.328	.64	7.03
	2	233	3.73	1.141	.43	6.39
	3	233	3.80	1.105	.95	6.22
	4	233	3.87	1.096	1.17	7.26
	5	233	3.88	1.184	1.14	7.25
Complete Data After Imputation	1	5755	3.91	1.246	.00	7.03
	2	5755	3.91	1.238	.00	6.39
	3	5755	3.91	1.237	.00	6.22
	4	5755	3.91	1.236	.00	7.26
	5	5755	3.91	1.240	.00	7.25

Table B 41

Descriptive Statistics: B3h: Please rate your level of satisfaction with each of the following-Effectiveness of library services in improving my learning experience

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5343	3.89	1.228	.00	5.00
Imputed Values	1	412	3.74	1.205	-.42	6.85
	2	412	3.76	1.158	.19	7.30
	3	412	3.71	1.159	-.46	6.90
	4	412	3.73	1.184	-.30	7.13
	5	412	3.68	1.160	.24	6.80
Complete Data After Imputation	1	5755	3.88	1.227	-.42	6.85
	2	5755	3.88	1.223	.00	7.30
	3	5755	3.88	1.224	-.46	6.90
	4	5755	3.88	1.225	-.30	7.13
	5	5755	3.87	1.224	.00	6.80

Table B 42

Descriptive Statistics: B4a: Please rate your level of satisfaction with each of the following-Helpfulness of Career Services Staff

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5515	2.61	2.008	.00	5.00
Imputed Values	1	240	2.72	1.711	-2.93	7.10
	2	240	2.84	1.670	-1.08	7.94
	3	240	2.79	1.748	-1.32	7.69
	4	240	2.82	1.718	-1.63	7.07
	5	240	2.73	1.733	-1.31	6.92
Complete Data After Imputation	1	5755	2.61	1.997	-2.93	7.10
	2	5755	2.62	1.996	-1.08	7.94
	3	5755	2.62	1.998	-1.32	7.69
	4	5755	2.62	1.998	-1.63	7.07
	5	5755	2.61	1.998	-1.31	6.92

Table B 43

Descriptive Statistics: B4b: Please rate your level of satisfaction with each of the following-Information on internships, co-ops, and other career-related experiences

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5506	2.54	1.970	.00	5.00
Imputed Values	1	249	2.63	1.651	-3.63	7.44
	2	249	2.53	1.614	-1.11	7.09
	3	249	2.68	1.792	-1.42	7.73
	4	249	2.56	1.741	-1.83	7.58
	5	249	2.62	1.733	-1.91	7.14
Complete Data After Imputation	1	5755	2.54	1.957	-3.63	7.44
	2	5755	2.54	1.955	-1.11	7.09
	3	5755	2.55	1.962	-1.42	7.73
	4	5755	2.54	1.960	-1.83	7.58
	5	5755	2.54	1.960	-1.91	7.14

Table B 44

Descriptive Statistics: B4c: Please rate your level of satisfaction with each of the following-Access to employment opportunities (e.g., career fairs, interviews, job listings, etc.)

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5512	2.61	1.982	.00	5.00
Imputed Values	1	243	2.65	1.700	-2.26	6.97
	2	243	2.62	1.581	-.89	6.68
	3	243	2.77	1.763	-1.31	7.05
	4	243	2.73	1.721	-1.59	7.96
	5	243	2.85	1.762	-2.07	7.45
Complete Data After Imputation	1	5755	2.61	1.970	-2.26	6.97
	2	5755	2.61	1.966	-.89	6.68
	3	5755	2.62	1.973	-1.31	7.05
	4	5755	2.61	1.971	-1.59	7.96
	5	5755	2.62	1.973	-2.07	7.45

Table B 45

Descriptive Statistics: B4d: Please rate your level of satisfaction with each of the following-Help in preparing for interviews, resumes, etc.

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5510	2.45	2.010	.00	5.00
Imputed Values	1	245	2.56	1.797	-2.95	7.36
	2	245	2.61	1.581	-1.21	6.94
	3	245	2.58	1.822	-2.16	7.36
	4	245	2.59	1.724	-2.48	6.97
	5	245	2.52	1.804	-1.54	7.66
Complete Data After Imputation	1	5755	2.45	2.001	-2.95	7.36
	2	5755	2.45	1.994	-1.21	6.94
	3	5755	2.45	2.002	-2.16	7.36
	4	5755	2.45	1.998	-2.48	6.97
	5	5755	2.45	2.001	-1.54	7.66

Table B 46

Descriptive Statistics: B4e: Please rate your level of satisfaction with each of the following-Availability of career resources online

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5494	2.51	1.981	.00	5.00
Imputed Values	1	261	2.48	1.803	-2.93	8.49
	2	261	2.54	1.625	-1.40	7.24
	3	261	2.58	1.851	-1.74	6.93
	4	261	2.73	1.755	-1.73	7.67
	5	261	2.67	1.852	-1.43	7.95
Complete Data After Imputation	1	5755	2.51	1.973	-2.93	8.49
	2	5755	2.51	1.966	-1.40	7.24
	3	5755	2.52	1.975	-1.74	6.93
	4	5755	2.52	1.971	-1.73	7.67
	5	5755	2.52	1.975	-1.43	7.95

Table B 47

Descriptive Statistics: B5a: Please rate your level of satisfaction with each of the following-Training on the technology that I need to use

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5506	2.62	1.902	.00	5.00
Imputed Values	1	249	2.58	1.682	-2.74	6.72
	2	249	2.74	1.679	-1.94	8.01
	3	249	2.57	1.769	-1.59	6.86
	4	249	2.69	1.788	-3.04	8.77
	5	249	2.53	1.740	-1.37	6.80
Complete Data After Imputation	1	5755	2.61	1.893	-2.74	6.72
	2	5755	2.62	1.893	-1.94	8.01
	3	5755	2.61	1.896	-1.59	6.86
	4	5755	2.62	1.897	-3.04	8.77
	5	5755	2.61	1.895	-1.37	6.80

Table B 48

Descriptive Statistics: B5b: Please rate your level of satisfaction with each of the following-Assistance from the helpdesk in solving my technology needs

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5503	2.80	1.898	.00	5.00
Imputed Values	1	252	2.69	1.680	-2.44	6.87
	2	252	3.01	1.677	-1.03	8.60
	3	252	2.88	1.968	-2.48	9.06
	4	252	2.68	1.865	-2.96	7.17
	5	252	2.73	1.784	-1.60	7.76
Complete Data After Imputation	1	5755	2.80	1.889	-2.44	6.87
	2	5755	2.81	1.889	-1.03	8.60
	3	5755	2.80	1.901	-2.48	9.06
	4	5755	2.80	1.897	-2.96	7.17
	5	5755	2.80	1.893	-1.60	7.76

Table B 49

Descriptive Statistics: B5c: Please rate your level of satisfaction with each of the following-Hours of operation for university computer labs

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5499	3.00	1.822	.00	5.00
Imputed Values	1	256	2.93	1.569	-1.21	6.71
	2	256	2.83	1.633	-1.09	8.00
	3	256	2.95	1.677	-1.33	9.77
	4	256	2.92	1.655	-1.03	7.30
	5	256	3.00	1.627	-1.82	7.45
Complete Data After Imputation	1	5755	3.00	1.812	-1.21	6.71
	2	5755	2.99	1.814	-1.09	8.00
	3	5755	3.00	1.816	-1.33	9.77
	4	5755	3.00	1.815	-1.03	7.30
	5	5755	3.00	1.814	-1.82	7.45

Table B 50

Descriptive Statistics: B5d: Please rate your level of satisfaction with each of the following-Availability of equipment and software in university computer labs to meet my needs

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5500	3.12	1.781	.00	5.00
Imputed Values	1	255	2.99	1.500	-1.56	6.88
	2	255	3.00	1.697	-1.54	7.81
	3	255	3.08	1.690	-1.47	9.12
	4	255	3.03	1.582	-.86	6.57
	5	255	3.08	1.682	-.72	7.87
Complete Data After Imputation	1	5755	3.11	1.769	-1.56	6.88
	2	5755	3.11	1.777	-1.54	7.81
	3	5755	3.11	1.777	-1.47	9.12
	4	5755	3.11	1.772	-.86	6.57
	5	5755	3.11	1.776	-.72	7.87

Table B 51

Descriptive Statistics: B5e: Please rate your level of satisfaction with each of the following-Availability of wireless access on campus

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5510	3.15	1.604	.00	5.00
Imputed Values	1	245	3.04	1.435	-1.08	6.68
	2	245	3.09	1.489	-.62	7.11
	3	245	3.14	1.516	-1.19	7.18
	4	245	3.00	1.524	-3.27	8.10
	5	245	3.14	1.716	-2.54	7.59
Complete Data After Imputation	1	5755	3.15	1.597	-1.08	6.68
	2	5755	3.15	1.599	-.62	7.11
	3	5755	3.15	1.600	-1.19	7.18
	4	5755	3.15	1.601	-3.27	8.10
	5	5755	3.15	1.609	-2.54	7.59

Table B 52

Descriptive Statistics: B5f: Please rate your level of satisfaction with each of the following-Online course management system(s) used in my classes

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5508	3.38	1.572	.00	5.00
Imputed Values	1	247	3.32	1.396	-.26	7.19
	2	247	3.33	1.411	-.29	7.78
	3	247	3.30	1.546	-1.50	8.54
	4	247	3.24	1.386	-1.03	7.13
	5	247	3.31	1.587	-1.74	7.63
Complete Data After Imputation	1	5755	3.37	1.565	-.26	7.19
	2	5755	3.37	1.565	-.29	7.78
	3	5755	3.37	1.571	-1.50	8.54
	4	5755	3.37	1.565	-1.03	7.13
	5	5755	3.37	1.573	-1.74	7.63

Table B 53

Descriptive Statistics: B5g: Please rate your level of satisfaction with each of the following-Effectiveness of information technology in improving my learning experience

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5490	3.27	1.624	.00	5.00
Imputed Values	1	265	3.21	1.505	-1.72	6.86
	2	265	3.19	1.404	-1.40	7.01
	3	265	3.16	1.618	-2.05	6.97
	4	265	3.15	1.483	-2.00	8.15
	5	265	3.31	1.589	-.85	7.63
Complete Data After Imputation	1	5755	3.27	1.619	-1.72	6.86
	2	5755	3.27	1.615	-1.40	7.01
	3	5755	3.26	1.624	-2.05	6.97
	4	5755	3.26	1.618	-2.00	8.15
	5	5755	3.27	1.622	-.85	7.63

Table B 54

Descriptive Statistics: C1a: Please rate your level of satisfaction with the services provided by the following offices on campus-Financial Aid Application/Award process

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5445	2.86	1.744	.00	5.00
Imputed Values	1	310	2.82	1.493	-1.38	6.24
	2	310	2.89	1.593	-2.16	7.63
	3	310	2.89	1.483	-.81	6.56
	4	310	2.79	1.535	-2.12	7.72
	5	310	2.92	1.537	-2.11	6.85
Complete Data After Imputation	1	5755	2.86	1.731	-1.38	6.24
	2	5755	2.86	1.736	-2.16	7.63
	3	5755	2.86	1.731	-.81	6.56
	4	5755	2.86	1.733	-2.12	7.72
	5	5755	2.86	1.733	-2.11	6.85

Table B 55

Descriptive Statistics: C1b: Please rate your level of satisfaction with the services provided by the following offices on campus-Financial Aid disbursement process

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5439	2.81	1.775	.00	5.00
Imputed Values	1	316	2.77	1.586	-1.41	6.89
	2	316	2.75	1.698	-1.39	7.39
	3	316	2.79	1.590	-1.09	6.80
	4	316	2.71	1.603	-1.87	6.74
	5	316	2.82	1.596	-1.27	6.67
Complete Data After Imputation	1	5755	2.80	1.765	-1.41	6.89
	2	5755	2.80	1.771	-1.39	7.39
	3	5755	2.81	1.765	-1.09	6.80
	4	5755	2.80	1.766	-1.87	6.74
	5	5755	2.81	1.765	-1.27	6.67

Table B 56

Descriptive Statistics: C1c: Please rate your level of satisfaction with the services provided by the following offices on campus-Cashier/Student Accounts/Billing Office

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5434	3.28	1.522	.00	5.00
Imputed Values	1	321	3.21	1.411	-2.06	7.65
	2	321	3.24	1.363	-.87	6.76
	3	321	3.33	1.445	-1.62	7.28
	4	321	3.17	1.383	-.36	6.66
	5	321	3.13	1.375	-.57	6.89
Complete Data After Imputation	1	5755	3.28	1.516	-2.06	7.65
	2	5755	3.28	1.513	-.87	6.76
	3	5755	3.28	1.517	-1.62	7.28
	4	5755	3.28	1.514	-.36	6.66
	5	5755	3.27	1.514	-.57	6.89

Table B 57

Descriptive Statistics: C1d: Please rate your level of satisfaction with the services provided by the following offices on campus-Registrar's Office

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5439	3.33	1.530	.00	5.00
Imputed Values	1	316	3.37	1.518	-2.20	7.29
	2	316	3.27	1.421	-1.14	8.41
	3	316	3.32	1.467	-1.84	7.67
	4	316	3.12	1.474	-1.09	6.95
	5	316	3.35	1.439	-1.49	7.89
Complete Data After Imputation	1	5755	3.33	1.529	-2.20	7.29
	2	5755	3.33	1.524	-1.14	8.41
	3	5755	3.33	1.527	-1.84	7.67
	4	5755	3.32	1.528	-1.09	6.95
	5	5755	3.33	1.525	-1.49	7.89

Table B 58

Descriptive Statistics: C1e: Please rate your level of satisfaction with the services provided by the following offices on campus-Bookstore

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5436	3.81	1.083	.00	5.00
Imputed Values	1	319	3.74	1.119	.24	6.78
	2	319	3.62	1.110	-.08	6.62
	3	319	3.72	1.056	.36	7.14
	4	319	3.68	1.037	-.71	7.32
	5	319	3.68	1.039	-.37	7.28
Complete Data After Imputation	1	5755	3.81	1.085	.00	6.78
	2	5755	3.80	1.086	-.08	6.62
	3	5755	3.81	1.082	.00	7.14
	4	5755	3.80	1.081	-.71	7.32
	5	5755	3.80	1.081	-.37	7.28

Table B 59

Descriptive Statistics: C1f: Please rate your level of satisfaction with the services provided by the following offices on campus-Health Services

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5431	3.23	1.659	.00	5.00
Imputed Values	1	324	3.24	1.670	-1.08	7.72
	2	324	3.11	1.530	-1.39	7.12
	3	324	3.14	1.497	-1.23	7.31
	4	324	3.23	1.593	-1.24	7.37
	5	324	3.04	1.592	-1.66	7.35
Complete Data After Imputation	1	5755	3.23	1.660	-1.08	7.72
	2	5755	3.22	1.652	-1.39	7.12
	3	5755	3.22	1.651	-1.23	7.31
	4	5755	3.23	1.656	-1.24	7.37
	5	5755	3.22	1.656	-1.66	7.35

Table B 60

Descriptive Statistics: C1g: Please rate your level of satisfaction with the services provided by the following offices on campus-Counseling (personal, interpersonal, or psychological)

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5421	2.18	2.029	.00	5.00
Imputed Values	1	334	2.26	1.793	-2.44	6.51
	2	334	2.40	1.866	-3.12	7.12
	3	334	2.21	1.885	-3.21	6.79
	4	334	2.29	1.909	-3.21	7.14
	5	334	2.29	1.813	-2.85	7.20
Complete Data After Imputation	1	5755	2.19	2.016	-2.44	6.51
	2	5755	2.20	2.020	-3.12	7.12
	3	5755	2.19	2.021	-3.21	6.79
	4	5755	2.19	2.022	-3.21	7.14
	5	5755	2.19	2.017	-2.85	7.20

Table B 61

Descriptive Statistics: C1h: Please rate your level of satisfaction with the services provided by the following offices on campus-Housing and Residence Life

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5445	3.20	1.597	.00	5.00
Imputed Values	1	310	3.10	1.486	-1.69	7.37
	2	310	3.00	1.543	-1.41	7.05
	3	310	3.14	1.448	-.91	6.88
	4	310	3.08	1.487	-1.67	8.09
	5	310	3.21	1.528	-.55	7.54
Complete Data After Imputation	1	5755	3.19	1.591	-1.69	7.37
	2	5755	3.19	1.594	-1.41	7.05
	3	5755	3.20	1.589	-.91	6.88
	4	5755	3.19	1.591	-1.67	8.09
	5	5755	3.20	1.593	-.55	7.54

Table B 62

Descriptive Statistics: C1i: Please rate your level of satisfaction with the services provided by the following offices on campus-Campus Recreation

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5429	3.50	1.584	.00	5.00
Imputed Values	1	326	3.39	1.515	-1.13	7.41
	2	326	3.33	1.431	-2.19	7.02
	3	326	3.33	1.604	-1.25	8.63
	4	326	3.43	1.449	-.49	8.80
	5	326	3.46	1.519	-.35	7.56
Complete Data After Imputation	1	5755	3.49	1.580	-1.13	7.41
	2	5755	3.49	1.576	-2.19	7.02
	3	5755	3.49	1.586	-1.25	8.63
	4	5755	3.49	1.577	-.49	8.80
	5	5755	3.49	1.580	-.35	7.56

Table B 63

Descriptive Statistics: C1j: Please rate your level of satisfaction with the services provided by the following offices on campus-Dining Services

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5439	3.25	1.426	.00	5.00
Imputed Values	1	316	3.16	1.376	-.87	6.21
	2	316	3.10	1.302	-1.46	6.56
	3	316	3.17	1.287	-.79	6.28
	4	316	3.00	1.292	-.97	6.31
	5	316	3.18	1.354	-1.15	6.95
Complete Data After Imputation	1	5755	3.24	1.424	-.87	6.21
	2	5755	3.24	1.420	-1.46	6.56
	3	5755	3.24	1.419	-.79	6.28
	4	5755	3.23	1.420	-.97	6.31
	5	5755	3.24	1.422	-1.15	6.95

Table B 64

Descriptive Statistics: C1k: Please rate your level of satisfaction with the services provided by the following offices on campus-On-campus shuttle/transportation services

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5435	3.27	1.638	.00	5.00
Imputed Values	1	320	3.13	1.658	-2.47	8.07
	2	320	3.23	1.618	-1.54	7.84
	3	320	3.13	1.592	-1.51	7.18
	4	320	3.29	1.574	-.70	7.08
	5	320	3.24	1.690	-2.22	7.87
Complete Data After Imputation	1	5755	3.27	1.640	-2.47	8.07
	2	5755	3.27	1.637	-1.54	7.84
	3	5755	3.27	1.636	-1.51	7.18
	4	5755	3.28	1.635	-.70	7.08
	5	5755	3.27	1.641	-2.22	7.87

Table B 65

Descriptive Statistics: C1l: Please rate your level of satisfaction with the services provided by the following offices on campus-Campus Police Department

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5437	2.87	1.811	.00	5.00
Imputed Values	1	318	2.99	1.679	-2.39	7.44
	2	318	2.96	1.676	-3.27	7.86
	3	318	3.00	1.810	-2.11	9.05
	4	318	2.85	1.718	-1.07	7.38
	5	318	2.87	1.716	-2.62	7.82
Complete Data After Imputation	1	5755	2.87	1.804	-2.39	7.44
	2	5755	2.87	1.803	-3.27	7.86
	3	5755	2.87	1.811	-2.11	9.05
	4	5755	2.87	1.806	-1.07	7.38
	5	5755	2.87	1.805	-2.62	7.82

Table B 66

Descriptive Statistics: C1m: Please rate your level of satisfaction with the services provided by the following offices on campus-Campus Parking

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5444	2.28	1.467	.00	5.00
Imputed Values	1	311	2.37	1.360	-1.33	6.42
	2	311	2.20	1.433	-2.60	6.65
	3	311	2.32	1.287	-1.07	5.64
	4	311	2.21	1.471	-.87	5.85
	5	311	2.18	1.460	-1.52	6.91
Complete Data After Imputation	1	5755	2.29	1.461	-1.33	6.42
	2	5755	2.28	1.465	-2.60	6.65
	3	5755	2.28	1.458	-1.07	5.64
	4	5755	2.28	1.467	-.87	5.85
	5	5755	2.28	1.467	-1.52	6.91

Table B 67

Descriptive Statistics: C2a: Please rate the quality of the staff associated with the following offices on campus-Financial Aid Application/Award process

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5435	2.63	1.875	.00	5.00
Imputed Values	1	320	2.75	1.528	-1.36	7.20
	2	320	2.58	1.720	-1.90	7.59
	3	320	2.68	1.644	-1.52	7.99
	4	320	2.51	1.500	-1.48	6.68
	5	320	2.75	1.608	-1.32	7.24
Complete Data After Imputation	1	5755	2.64	1.858	-1.36	7.20
	2	5755	2.63	1.867	-1.90	7.59
	3	5755	2.64	1.863	-1.52	7.99
	4	5755	2.63	1.856	-1.48	6.68
	5	5755	2.64	1.861	-1.32	7.24

Table B 68

Descriptive Statistics: C2b: Please rate the quality of the staff associated with the following offices on campus-Financial Aid disbursement process

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5424	2.56	1.896	.00	5.00
Imputed Values	1	331	2.68	1.617	-1.79	7.07
	2	331	2.48	1.720	-1.91	6.79
	3	331	2.53	1.668	-2.02	8.01
	4	331	2.42	1.556	-1.33	7.29
	5	331	2.67	1.577	-1.52	6.51
Complete Data After Imputation	1	5755	2.57	1.881	-1.79	7.07
	2	5755	2.56	1.886	-1.91	6.79
	3	5755	2.56	1.884	-2.02	8.01
	4	5755	2.55	1.878	-1.33	7.29
	5	5755	2.57	1.879	-1.52	6.51

Table B 69

Descriptive Statistics: C2c: Please rate the quality of the staff associated with the following offices on campus-Cashier/Student Accounts/Billing Office

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5418	2.99	1.749	.00	5.00
Imputed Values	1	337	3.00	1.629	-1.62	8.23
	2	337	2.98	1.529	-.99	7.61
	3	337	3.05	1.554	-.79	7.93
	4	337	2.85	1.482	-1.04	7.37
	5	337	2.96	1.565	-1.32	7.14
Complete Data After Imputation	1	5755	2.99	1.742	-1.62	8.23
	2	5755	2.99	1.737	-.99	7.61
	3	5755	3.00	1.738	-.79	7.93
	4	5755	2.99	1.735	-1.04	7.37
	5	5755	2.99	1.739	-1.32	7.14

Table B 70

Descriptive Statistics: C2d: Please rate the quality of the staff associated with the following offices on campus-Registrar's Office

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5422	3.06	1.734	.00	5.00
Imputed Values	1	333	3.23	1.616	-2.01	6.66
	2	333	3.05	1.528	-2.25	8.33
	3	333	3.06	1.513	-1.81	7.17
	4	333	2.82	1.491	-1.41	6.77
	5	333	3.03	1.583	-1.18	7.79
Complete Data After Imputation	1	5755	3.07	1.727	-2.01	6.66
	2	5755	3.06	1.722	-2.25	8.33
	3	5755	3.06	1.721	-1.81	7.17
	4	5755	3.05	1.721	-1.41	6.77
	5	5755	3.06	1.725	-1.18	7.79

Table B 71

Descriptive Statistics: C2e: Please rate the quality of the staff associated with the following offices on campus-Campus bookstore

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5426	3.83	1.158	.00	5.00
Imputed Values	1	329	3.70	1.168	.20	6.78
	2	329	3.68	1.020	1.27	6.39
	3	329	3.80	1.045	1.09	7.35
	4	329	3.75	1.071	.74	7.02
	5	329	3.70	1.110	.40	7.18
Complete Data After Imputation	1	5755	3.82	1.159	.00	6.78
	2	5755	3.82	1.151	.00	6.39
	3	5755	3.83	1.152	.00	7.35
	4	5755	3.83	1.154	.00	7.02
	5	5755	3.82	1.156	.00	7.18

Table B 72

Descriptive Statistics: C2f: Please rate the quality of the staff associated with the following offices on campus-Health Services

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5422	3.24	1.730	.00	5.00
Imputed Values	1	333	3.31	1.749	-1.78	8.93
	2	333	3.15	1.619	-1.65	7.54
	3	333	3.04	1.488	-1.31	6.83
	4	333	3.41	1.638	-2.39	7.82
	5	333	3.00	1.579	-1.11	7.33
Complete Data After Imputation	1	5755	3.25	1.731	-1.78	8.93
	2	5755	3.24	1.724	-1.65	7.54
	3	5755	3.23	1.717	-1.31	6.83
	4	5755	3.25	1.725	-2.39	7.82
	5	5755	3.23	1.722	-1.11	7.33

Table B 73

Descriptive Statistics: C2g: Please rate the quality of the staff associated with the following offices on campus-Counseling Staff

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5429	2.19	2.063	.00	5.00
Imputed Values	1	326	2.34	1.815	-3.72	6.64
	2	326	2.29	1.883	-3.53	8.56
	3	326	2.16	1.933	-3.71	6.75
	4	326	2.31	1.845	-3.37	7.30
	5	326	2.27	1.758	-2.36	8.17
Complete Data After Imputation	1	5755	2.20	2.050	-3.72	6.64
	2	5755	2.19	2.053	-3.53	8.56
	3	5755	2.19	2.056	-3.71	6.75
	4	5755	2.19	2.051	-3.37	7.30
	5	5755	2.19	2.047	-2.36	8.17

Table B 74

Descriptive Statistics: C2h: Please rate the quality of the staff associated with the following offices on campus-Housing Residence Life

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5426	3.19	1.680	.00	5.00
Imputed Values	1	329	3.18	1.587	-.55	7.27
	2	329	3.04	1.554	-1.75	8.09
	3	329	3.07	1.519	-.60	6.92
	4	329	3.19	1.513	-1.54	8.37
	5	329	3.22	1.517	-.92	7.06
Complete Data After Imputation	1	5755	3.19	1.674	-.55	7.27
	2	5755	3.18	1.673	-1.75	8.09
	3	5755	3.18	1.671	-.60	6.92
	4	5755	3.19	1.670	-1.54	8.37
	5	5755	3.19	1.671	-.92	7.06

Table B 75

Descriptive Statistics: C2i: Please rate the quality of the staff associated with the following offices on campus-Campus Recreation

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5424	3.37	1.693	.00	5.00
Imputed Values	1	331	3.20	1.575	-1.12	7.68
	2	331	3.21	1.510	-1.11	7.74
	3	331	3.21	1.581	-1.50	7.10
	4	331	3.34	1.514	-1.01	7.49
	5	331	3.33	1.638	-1.95	7.38
Complete Data After Imputation	1	5755	3.36	1.687	-1.12	7.68
	2	5755	3.36	1.684	-1.11	7.74
	3	5755	3.36	1.687	-1.50	7.10
	4	5755	3.36	1.683	-1.01	7.49
	5	5755	3.36	1.690	-1.95	7.38

Table B 76

Descriptive Statistics: C2j: Please rate the quality of the staff associated with the following offices on campus-Dining Services

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5427	3.51	1.480	.00	5.00
Imputed Values	1	328	3.37	1.399	-.56	7.46
	2	328	3.38	1.232	-.25	7.40
	3	328	3.36	1.434	-.58	7.93
	4	328	3.41	1.306	.33	7.42
	5	328	3.41	1.336	-.25	7.73
Complete Data After Imputation	1	5755	3.50	1.476	-.56	7.46
	2	5755	3.50	1.467	-.25	7.40
	3	5755	3.50	1.478	-.58	7.93
	4	5755	3.50	1.471	.00	7.42
	5	5755	3.50	1.472	-.25	7.73

Table B 77

Descriptive Statistics: C2k: Please rate the quality of the staff associated with the following offices on campus-On campus shuttle/transportation services

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5424	3.26	1.696	.00	5.00
Imputed Values	1	331	3.24	1.651	-1.23	7.65
	2	331	3.26	1.575	-1.42	7.68
	3	331	3.22	1.666	-.61	8.55
	4	331	3.35	1.589	-.73	7.53
	5	331	3.36	1.703	-1.60	7.85
Complete Data After Imputation	1	5755	3.26	1.693	-1.23	7.65
	2	5755	3.26	1.689	-1.42	7.68
	3	5755	3.26	1.694	-.61	8.55
	4	5755	3.27	1.690	-.73	7.53
	5	5755	3.27	1.696	-1.60	7.85

Table B 78

Descriptive Statistics: C2l: Please rate the quality of the staff associated with the following offices on campus-Campus Police Department

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5425	2.74	1.888	.00	5.00
Imputed Values	1	330	2.81	1.780	-2.93	7.65
	2	330	2.72	1.765	-2.72	7.48
	3	330	2.81	1.812	-2.41	8.34
	4	330	2.66	1.692	-1.83	7.92
	5	330	2.81	1.729	-1.65	8.12
Complete Data After Imputation	1	5755	2.75	1.882	-2.93	7.65
	2	5755	2.74	1.881	-2.72	7.48
	3	5755	2.75	1.883	-2.41	8.34
	4	5755	2.74	1.877	-1.83	7.92
	5	5755	2.75	1.879	-1.65	8.12

Table B 79

Descriptive Statistics: C2m: Please rate the quality of the staff associated with the following offices on campus-Parking

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5427	2.36	1.733	.00	5.00
Imputed Values	1	328	2.52	1.527	-3.06	7.69
	2	328	2.31	1.636	-2.37	7.46
	3	328	2.34	1.670	-2.55	6.70
	4	328	2.47	1.544	-1.15	6.96
	5	328	2.34	1.634	-1.90	9.23
Complete Data After Imputation	1	5755	2.37	1.722	-3.06	7.69
	2	5755	2.36	1.727	-2.37	7.46
	3	5755	2.36	1.729	-2.55	6.70
	4	5755	2.37	1.723	-1.15	6.96
	5	5755	2.36	1.727	-1.90	9.23

Table B 80

Descriptive Statistics: C3a: How satisfied are you with the ease with which you can navigate through the following online services-Billing system

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5414	3.58	1.347	.00	5.00
Imputed Values	1	341	3.55	1.377	.30	7.96
	2	341	3.53	1.292	-.13	6.93
	3	341	3.51	1.313	-.18	6.80
	4	341	3.48	1.354	-.57	7.27
	5	341	3.48	1.306	-.89	7.82
Complete Data After Imputation	1	5755	3.57	1.349	.00	7.96
	2	5755	3.57	1.344	-.13	6.93
	3	5755	3.57	1.345	-.18	6.80
	4	5755	3.57	1.347	-.57	7.27
	5	5755	3.57	1.345	-.89	7.82

Table B 81

Descriptive Statistics: C3b: How satisfied are you with the ease with which you can navigate through the following online services-Financial Aid

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5410	3.16	1.661	.00	5.00
Imputed Values	1	345	3.04	1.599	-2.46	6.93
	2	345	3.04	1.641	-2.03	8.09
	3	345	3.19	1.545	-1.51	6.96
	4	345	3.10	1.560	-1.92	7.80
	5	345	3.12	1.572	-.97	6.90
Complete Data After Imputation	1	5755	3.16	1.657	-2.46	6.93
	2	5755	3.16	1.660	-2.03	8.09
	3	5755	3.17	1.654	-1.51	6.96
	4	5755	3.16	1.655	-1.92	7.80
	5	5755	3.16	1.656	-.97	6.90

Table B 82

Descriptive Statistics: C3c: How satisfied are you with the ease with which you can navigate through the following online services-Course Registration System

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5407	3.66	1.180	.00	5.00
Imputed Values	1	348	3.55	1.213	-.52	6.60
	2	348	3.59	1.184	-.47	7.72
	3	348	3.64	1.134	.53	7.19
	4	348	3.61	1.183	.49	7.03
	5	348	3.55	1.182	-.08	6.92
Complete Data After Imputation	1	5755	3.66	1.182	-.52	6.60
	2	5755	3.66	1.180	-.47	7.72
	3	5755	3.66	1.177	.00	7.19
	4	5755	3.66	1.180	.00	7.03
	5	5755	3.66	1.180	-.08	6.92

Table B 83

Descriptive Statistics: D1a: In general, how safe do you feel in campus residence halls during the day/early evening

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5425	2.97	1.442	.00	4.00
Imputed Values	1	330	3.01	1.342	-.58	6.66
	2	330	2.86	1.427	-1.58	7.02
	3	330	2.93	1.376	-1.29	6.32
	4	330	3.01	1.292	-1.38	6.90
	5	330	2.95	1.419	-1.79	7.51
Complete Data After Imputation	1	5755	2.98	1.436	-.58	6.66
	2	5755	2.97	1.441	-1.58	7.02
	3	5755	2.97	1.438	-1.29	6.32
	4	5755	2.98	1.434	-1.38	6.90
	5	5755	2.97	1.441	-1.79	7.51

Table B 84

Descriptive Statistics: D1b: In general, how safe do you feel in campus residence halls at night

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5416	2.75	1.467	.00	4.00
Imputed Values	1	339	2.78	1.453	-1.41	6.43
	2	339	2.57	1.470	-2.60	6.72
	3	339	2.72	1.406	-1.20	6.18
	4	339	2.72	1.340	-.80	7.08
	5	339	2.72	1.421	-1.38	6.90
Complete Data After Imputation	1	5755	2.75	1.466	-1.41	6.43
	2	5755	2.74	1.468	-2.60	6.72
	3	5755	2.74	1.464	-1.20	6.18
	4	5755	2.74	1.460	-.80	7.08
	5	5755	2.74	1.464	-1.38	6.90

Table B 85

Descriptive Statistics: D1c: In general, how safe do you feel in parking lots, garages, and/or decks on campus during the day/early evening

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5401	3.06	1.161	.00	4.00
Imputed Values	1	354	3.07	1.139	-.30	6.33
	2	354	3.00	1.096	-.92	6.23
	3	354	3.07	1.128	-.11	5.88
	4	354	3.02	1.025	-.06	6.03
	5	354	3.10	1.132	-.14	6.50
Complete Data After Imputation	1	5755	3.06	1.159	-.30	6.33
	2	5755	3.05	1.157	-.92	6.23
	3	5755	3.06	1.158	-.11	5.88
	4	5755	3.05	1.153	-.06	6.03
	5	5755	3.06	1.159	-.14	6.50

Table B 86

Descriptive Statistics: D1d: In general, how safe do you feel in parking lots, garages, and/or decks on campus at night

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5416	2.43	1.220	.00	4.00
Imputed Values	1	339	2.45	1.191	-.93	5.60
	2	339	2.36	1.198	-1.25	6.22
	3	339	2.30	1.111	-.93	5.68
	4	339	2.34	1.135	-.97	5.45
	5	339	2.35	1.209	-1.24	7.23
Complete Data After Imputation	1	5755	2.43	1.218	-.93	5.60
	2	5755	2.43	1.218	-1.25	6.22
	3	5755	2.43	1.214	-.93	5.68
	4	5755	2.43	1.215	-.97	5.45
	5	5755	2.43	1.219	-1.24	7.23

Table B 87

Descriptive Statistics: D1e: In general, how safe do you feel in non-residence hall buildings during the day/early evening

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5412	3.34	.955	.00	4.00
Imputed Values	1	343	3.22	.924	.79	6.24
	2	343	3.21	.941	-.10	6.14
	3	343	3.30	.889	.65	5.74
	4	343	3.31	.881	.07	5.91
	5	343	3.34	.949	.00	5.89
Complete Data After Imputation	1	5755	3.33	.954	.00	6.24
	2	5755	3.33	.955	-.10	6.14
	3	5755	3.33	.951	.00	5.74
	4	5755	3.33	.951	.00	5.91
	5	5755	3.34	.955	.00	5.89

Table B 88

Descriptive Statistics: D1f: In general, how safe do you feel in non-residence hall buildings at night

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5408	2.87	1.128	.00	4.00
Imputed Values	1	347	2.74	1.069	-.35	5.94
	2	347	2.85	1.090	-.28	6.08
	3	347	2.87	.999	-.07	6.08
	4	347	2.84	1.015	-.18	5.55
	5	347	2.92	1.066	-.28	5.97
Complete Data After Imputation	1	5755	2.87	1.125	-.35	5.94
	2	5755	2.87	1.125	-.28	6.08
	3	5755	2.87	1.120	-.07	6.08
	4	5755	2.87	1.121	-.18	5.55
	5	5755	2.88	1.124	-.28	5.97

Table B 89

Descriptive Statistics: D1g: In general, how safe do you feel outside on the grounds of the campus during the day/early evening

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5409	3.26	.940	.00	4.00
Imputed Values	1	346	3.14	.908	.61	5.52
	2	346	3.17	.913	-.04	5.84
	3	346	3.27	.881	-.03	5.65
	4	346	3.26	.874	1.18	5.79
	5	346	3.30	.859	.77	5.54
Complete Data After Imputation	1	5755	3.26	.939	.00	5.52
	2	5755	3.26	.939	-.04	5.84
	3	5755	3.26	.937	-.03	5.65
	4	5755	3.26	.936	.00	5.79
	5	5755	3.27	.936	.00	5.54

Table B 90

Descriptive Statistics: D1h: In general, how safe do you feel outside on the grounds of the campus at night

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5410	2.47	1.103	.00	4.00
Imputed Values	1	345	2.37	1.082	-.58	6.41
	2	345	2.43	1.046	-.47	5.44
	3	345	2.37	1.090	-1.18	6.09
	4	345	2.40	1.044	-1.02	6.08
	5	345	2.44	1.031	-.78	5.14
Complete Data After Imputation	1	5755	2.46	1.102	-.58	6.41
	2	5755	2.46	1.100	-.47	5.44
	3	5755	2.46	1.103	-1.18	6.09
	4	5755	2.46	1.100	-1.02	6.08
	5	5755	2.47	1.099	-.78	5.14

Table B 91

Descriptive Statistics: D2a: How satisfied are you with the availability of public information about crimes on campus

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5356	3.89	.956	1.00	5.00
Imputed Values	1	399	3.75	1.011	.33	7.20
	2	399	3.79	.938	.96	7.02
	3	399	3.87	1.002	1.12	7.24
	4	399	3.83	.910	1.32	6.32
	5	399	3.75	.986	.45	6.96
Complete Data After Imputation	1	5755	3.88	.960	.33	7.20
	2	5755	3.88	.955	.96	7.02
	3	5755	3.89	.959	1.00	7.24
	4	5755	3.89	.953	1.00	6.32
	5	5755	3.88	.959	.45	6.96

Table B 92

Descriptive Statistics: D2b: How satisfied are you with the availability of information about crime prevention and safety on campus

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5314	3.84	.936	1.00	5.00
Imputed Values	1	441	3.74	.954	.53	6.25
	2	441	3.77	.921	1.39	6.85
	3	441	3.81	.949	.81	6.28
	4	441	3.78	.907	.72	6.30
	5	441	3.77	.933	.64	6.30
Complete Data After Imputation	1	5755	3.83	.938	.53	6.25
	2	5755	3.83	.935	1.00	6.85
	3	5755	3.83	.937	.81	6.28
	4	5755	3.83	.934	.72	6.30
	5	5755	3.83	.936	.64	6.30

Table B 93

Descriptive Statistics: D3: If you observed someone on campus behaving suspiciously or in a threatening manner, would you know how to report it?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5342	.67	.472	.00	1.00
Imputed Values	1	413	.70	.460	-.58	2.14
	2	413	.63	.460	-.74	2.07
	3	413	.67	.511	-.78	2.04
	4	413	.69	.505	-.75	2.11
	5	413	.63	.460	-.64	2.40
Complete Data After Imputation	1	5755	.67	.471	-.58	2.14
	2	5755	.66	.471	-.74	2.07
	3	5755	.67	.475	-.78	2.04
	4	5755	.67	.474	-.75	2.11
	5	5755	.66	.471	-.64	2.40

Table B 94

Descriptive Statistics: D4: If you observed someone on campus behaving suspiciously or in a threatening manner, how likely would you be to report it to a campus authority?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5330	3.26	.762	1.00	4.00
Imputed Values	1	425	3.26	.796	.40	5.34
	2	425	3.17	.843	.56	5.90
	3	425	3.31	.792	.98	5.51
	4	425	3.26	.806	1.04	5.56
	5	425	3.24	.769	.85	5.65
Complete Data After Imputation	1	5755	3.26	.765	.40	5.34
	2	5755	3.25	.769	.56	5.90
	3	5755	3.26	.765	.98	5.51
	4	5755	3.26	.766	1.00	5.56
	5	5755	3.26	.763	.85	5.65

Table B 95

Descriptive Statistics: E1a: About how often during the typical year do you attend or participate in each of the following campus activities: Workshops, seminars, speakers, etc. outside of class

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5391	1.88	1.447	.00	5.00
Imputed Values	1	364	1.99	1.481	-2.39	5.98
	2	364	2.08	1.420	-2.52	6.51
	3	364	1.97	1.498	-2.33	6.75
	4	364	2.06	1.390	-1.68	6.10
	5	364	2.16	1.447	-1.51	5.82
Complete Data After Imputation	1	5755	1.89	1.449	-2.39	5.98
	2	5755	1.89	1.446	-2.52	6.51
	3	5755	1.89	1.450	-2.33	6.75
	4	5755	1.89	1.444	-1.68	6.10
	5	5755	1.90	1.448	-1.51	5.82

Table B 96

Descriptive Statistics: E1b: About how often during the typical year do you attend or participate in each of the following campus activities: University sponsored art events (e.g., plays, musical performances, exhibits)

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5382	1.76	1.440	.00	5.00
Imputed Values	1	373	1.86	1.418	-1.63	6.69
	2	373	1.80	1.378	-2.45	7.31
	3	373	1.75	1.358	-1.66	5.19
	4	373	1.88	1.357	-1.93	6.45
	5	373	1.79	1.453	-3.08	5.20
Complete Data After Imputation	1	5755	1.77	1.438	-1.63	6.69
	2	5755	1.76	1.436	-2.45	7.31
	3	5755	1.76	1.434	-1.66	5.19
	4	5755	1.77	1.435	-1.93	6.45
	5	5755	1.76	1.440	-3.08	5.20

Table B 97

Descriptive Statistics: E1c: About how often during the typical year do you attend or participate in each of the following campus activities: Multicultural/diversity events/programs

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5357	1.37	1.452	.00	5.00
Imputed Values	1	398	1.47	1.439	-2.80	5.77
	2	398	1.55	1.375	-2.11	5.46
	3	398	1.40	1.467	-2.83	5.54
	4	398	1.55	1.521	-3.32	5.27
	5	398	1.49	1.528	-2.53	5.81
Complete Data After Imputation	1	5755	1.38	1.451	-2.80	5.77
	2	5755	1.38	1.448	-2.11	5.46
	3	5755	1.37	1.453	-2.83	5.54
	4	5755	1.38	1.458	-3.32	5.27
	5	5755	1.38	1.458	-2.53	5.81

Table B 98

Descriptive Statistics: E1d: About how often during the typical year do you attend or participate in each of the following campus activities: Community service/volunteer work

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5335	1.95	1.635	.00	5.00
Imputed Values	1	420	1.96	1.633	-3.68	7.16
	2	420	2.07	1.619	-3.12	6.48
	3	420	2.01	1.515	-3.58	6.32
	4	420	2.01	1.616	-3.32	6.37
	5	420	1.87	1.684	-3.89	6.52
Complete Data After Imputation	1	5755	1.95	1.634	-3.68	7.16
	2	5755	1.96	1.634	-3.12	6.48
	3	5755	1.95	1.626	-3.58	6.32
	4	5755	1.95	1.633	-3.32	6.37
	5	5755	1.94	1.638	-3.89	6.52

Table B 99

Descriptive Statistics: E1e: About how often during the typical year do you attend or participate in each of the following campus activities: Intramural activities (including clubs and recreational sports)

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5316	1.83	1.893	.00	5.00
Imputed Values	1	439	1.77	1.877	-3.80	6.84
	2	439	2.10	1.858	-4.75	8.39
	3	439	1.95	1.955	-3.42	8.00
	4	439	1.88	1.851	-3.09	8.24
	5	439	2.04	1.847	-3.27	7.06
Complete Data After Imputation	1	5755	1.83	1.891	-3.80	6.84
	2	5755	1.85	1.891	-4.75	8.39
	3	5755	1.84	1.898	-3.42	8.00
	4	5755	1.84	1.889	-3.09	8.24
	5	5755	1.85	1.890	-3.27	7.06

Table B 100

Descriptive Statistics: E1f: About how often during the typical year do you attend or participate in each of the following campus activities: Co-curricular activities (e.g. University sponsored student organizations, student government, Greek life)

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5335	2.02	2.024	.00	5.00
Imputed Values	1	420	2.18	2.115	-4.80	7.36
	2	420	2.43	2.088	-2.85	10.01
	3	420	2.18	2.006	-3.45	8.39
	4	420	2.31	2.056	-3.40	8.94
	5	420	2.24	2.002	-3.47	7.55
Complete Data After Imputation	1	5755	2.03	2.031	-4.80	7.36
	2	5755	2.05	2.032	-2.85	10.01
	3	5755	2.03	2.023	-3.45	8.39
	4	5755	2.04	2.028	-3.40	8.94
	5	5755	2.04	2.024	-3.47	7.55

Table B 101

Descriptive Statistics: E1g: About how often during the typical year do you attend or participate in each of the following campus activities: Intercollegiate athletic events

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5343	2.10	1.827	.00	5.00
Imputed Values	1	412	1.92	1.916	-2.71	7.88
	2	412	2.24	1.863	-5.04	7.20
	3	412	2.08	1.954	-2.65	9.11
	4	412	2.10	1.826	-3.04	6.90
	5	412	2.20	1.875	-3.10	7.62
Complete Data After Imputation	1	5755	2.08	1.834	-2.71	7.88
	2	5755	2.11	1.830	-5.04	7.20
	3	5755	2.09	1.836	-2.65	9.11
	4	5755	2.10	1.827	-3.04	6.90
	5	5755	2.10	1.831	-3.10	7.62

Table B 102

Descriptive Statistics: E2a: Please rate your overall satisfaction with weekend activities on campus for students

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5390	3.40	1.002	1.00	5.00
Imputed Values	1	365	3.34	.925	.50	5.69
	2	365	3.35	.908	1.06	6.03
	3	365	3.36	.992	.33	6.14
	4	365	3.24	.945	.24	5.47
	5	365	3.25	1.035	.61	6.41
Complete Data After Imputation	1	5755	3.39	.998	.50	5.69
	2	5755	3.40	.997	1.00	6.03
	3	5755	3.40	1.002	.33	6.14
	4	5755	3.39	1.000	.24	5.47
	5	5755	3.39	1.005	.61	6.41

Table B 103

*D*escriptive *Statistics: E2b: Please rate your overall satisfaction with the ease with which I can get involved in campus organizations*

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5386	3.70	.934	1.00	5.00
Imputed Values	1	369	3.60	.936	1.14	6.18
	2	369	3.57	.876	1.05	6.70
	3	369	3.63	.959	.95	6.31
	4	369	3.56	.855	.34	5.78
	5	369	3.53	.875	.99	5.85
Complete Data After Imputation	1	5755	3.69	.934	1.00	6.18
	2	5755	3.69	.930	1.00	6.70
	3	5755	3.69	.935	.95	6.31
	4	5755	3.69	.929	.34	5.78
	5	5755	3.69	.931	.99	5.85

Table B 104

Descriptive Statistics: E2c: Please rate your overall satisfaction with opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5386	3.71	.923	1.00	5.00
Imputed Values	1	369	3.64	.890	.69	6.03
	2	369	3.60	.884	.83	6.64
	3	369	3.67	.916	1.10	6.44
	4	369	3.56	.876	.96	6.09
	5	369	3.61	.889	1.30	5.77
Complete Data After Imputation	1	5755	3.71	.921	.69	6.03
	2	5755	3.70	.921	.83	6.64
	3	5755	3.71	.923	1.00	6.44
	4	5755	3.70	.921	.96	6.09
	5	5755	3.70	.921	1.00	5.77

Table B 105

Descriptive Statistics: E2c: Please rate your overall satisfaction with opportunities on campus to develop leadership skills

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5375	3.76	.881	1.00	5.00
Imputed Values	1	380	3.67	.857	.59	5.97
	2	380	3.68	.827	1.36	6.41
	3	380	3.68	.828	1.28	5.93
	4	380	3.62	.845	.89	6.19
	5	380	3.66	.868	1.36	5.95
Complete Data After Imputation	1	5755	3.75	.879	.59	5.97
	2	5755	3.75	.877	1.00	6.41
	3	5755	3.75	.878	1.00	5.93
	4	5755	3.75	.879	.89	6.19
	5	5755	3.75	.880	1.00	5.95

Table B 106

Descriptive Statistics: F1a: To what extent do you agree or disagree with each of the following: I am confident that I made the right decision to attend this university

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5373	4.26	.933	1.00	5.00
Imputed Values	1	382	4.13	.905	1.40	6.75
	2	382	4.15	.900	1.39	7.09
	3	382	4.16	.912	1.67	6.34
	4	382	4.07	.925	1.61	6.84
	5	382	4.08	.937	.23	6.67
Complete Data After Imputation	1	5755	4.25	.932	1.00	6.75
	2	5755	4.26	.931	1.00	7.09
	3	5755	4.26	.932	1.00	6.34
	4	5755	4.25	.934	1.00	6.84
	5	5755	4.25	.935	.23	6.67

Table B 107

Descriptive Statistics: F1b: To what extent do you agree or disagree with each of the following: I believe I was academically prepared to attend this institution

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5370	4.27	.913	1.00	5.00
Imputed Values	1	385	4.17	.927	1.32	6.95
	2	385	4.32	.975	1.56	6.91
	3	385	4.21	.921	.95	7.10
	4	385	4.15	.957	1.72	6.67
	5	385	4.17	.961	1.57	7.35
Complete Data After Imputation	1	5755	4.27	.914	1.00	6.95
	2	5755	4.28	.917	1.00	6.91
	3	5755	4.27	.914	.95	7.10
	4	5755	4.26	.917	1.00	6.67
	5	5755	4.27	.917	1.00	7.35

Table B 108

Descriptive Statistics: F1c: To what extent do you agree or disagree with each of the following: I am feel I belong at this institution

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5361	4.18	.975	1.00	5.00
Imputed Values	1	394	4.01	.967	.77	6.36
	2	394	4.07	.951	.61	7.67
	3	394	4.11	.981	1.38	7.01
	4	394	4.04	.957	1.21	6.69
	5	394	4.04	.965	1.54	6.59
Complete Data After Imputation	1	5755	4.17	.976	.77	6.36
	2	5755	4.17	.974	.61	7.67
	3	5755	4.18	.976	1.00	7.01
	4	5755	4.17	.975	1.00	6.69
	5	5755	4.17	.975	1.00	6.59

Table B 109

Descriptive Statistics: F1d: To what extent do you agree or disagree with each of the following: I will have the financial resources I need to finish college

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5354	3.86	1.062	1.00	5.00
Imputed Values	1	401	3.82	.997	1.02	7.51
	2	401	3.90	1.068	.12	6.69
	3	401	3.78	1.102	.26	6.80
	4	401	3.71	1.066	.38	6.78
	5	401	3.82	1.037	.78	6.63
Complete Data After Imputation	1	5755	3.86	1.057	1.00	7.51
	2	5755	3.87	1.062	.12	6.69
	3	5755	3.86	1.065	.26	6.80
	4	5755	3.85	1.063	.38	6.78
	5	5755	3.86	1.060	.78	6.63

Table B 110

Descriptive Statistics: F2: While school has been in session this academic year, about how many hours per week have you spent working for pay on campus?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5386	.77	1.595	.00	7.00
Imputed Values	1	369	.65	1.528	-3.62	4.27
	2	369	.92	1.685	-3.21	6.75
	3	369	.72	1.686	-3.47	6.36
	4	369	.85	1.611	-3.82	6.22
	5	369	.81	1.539	-2.85	5.96
Complete Data After Imputation	1	5755	.76	1.591	-3.62	7.00
	2	5755	.78	1.601	-3.21	7.00
	3	5755	.76	1.601	-3.47	7.00
	4	5755	.77	1.596	-3.82	7.00
	5	5755	.77	1.592	-2.85	7.00

Table B 111

Descriptive Statistics: F3: While school has been in session this academic year, about how many hours per week have you spent working for pay ff campus?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5372	1.49	2.278	.00	7.00
Imputed Values	1	383	1.78	2.326	-5.37	8.52
	2	383	1.50	2.402	-5.85	8.75
	3	383	1.55	2.242	-4.96	8.56
	4	383	1.27	2.357	-4.33	8.56
	5	383	1.76	2.309	-5.35	9.21
Complete Data After Imputation	1	5755	1.51	2.282	-5.37	8.52
	2	5755	1.50	2.286	-5.85	8.75
	3	5755	1.50	2.275	-4.96	8.56
	4	5755	1.48	2.284	-4.33	8.56
	5	5755	1.51	2.281	-5.35	9.21

Table B 112

Descriptive Statistics: F4: How does your job affect your school work?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5287	2.95	1.067	1.00	4.00
Imputed Values	1	468	2.90	1.011	.13	5.48
	2	468	2.87	1.089	-.34	5.97
	3	468	2.86	1.039	.20	6.06
	4	468	2.93	1.065	-.01	5.89
	5	468	2.87	1.028	-.58	5.84
Complete Data After Imputation	1	5755	2.94	1.063	.13	5.48
	2	5755	2.94	1.069	-.34	5.97
	3	5755	2.94	1.065	.20	6.06
	4	5755	2.95	1.067	-.01	5.89
	5	5755	2.94	1.064	-.58	5.84

Table B 113

Descriptive Statistics: F5: Which best describes your current educational plans?

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		5279	5.01	1.898	1.00	6.00
Imputed Values	1	476	5.10	1.825	-.07	9.97
	2	476	5.05	1.905	-.85	11.41
	3	476	5.09	1.922	-.62	10.62
	4	476	5.11	1.892	-.48	9.92
	5	476	5.18	1.919	.16	11.45
Complete Data After Imputation	1	5755	5.02	1.892	-.07	9.97
	2	5755	5.01	1.898	-.85	11.41
	3	5755	5.02	1.900	-.62	10.62
	4	5755	5.02	1.897	-.48	9.92
	5	5755	5.02	1.900	.16	11.45

Table B 114

Descriptive Statistics: Academic Preparation

Data	Imputation	N	Mean	Std. Deviation	Minimum	Maximum
Original Data		4229	3.7792	.57710	1.3100	5.2500
Imputed Values	1	1526	3.6988	.59750	2.0221	5.6146
	2	1526	3.6969	.58365	1.8822	5.5909
	3	1526	3.6921	.59101	1.8618	5.6683
	4	1526	3.7010	.58022	1.8362	5.8298
	5	1526	3.7064	.56785	1.9999	5.7567
Complete Data After Imputation	1	5755	3.7579	.58361	1.3100	5.6146
	2	5755	3.7574	.57993	1.3100	5.5909
	3	5755	3.7561	.58204	1.3100	5.6683
	4	5755	3.7585	.57891	1.3100	5.8298
	5	5755	3.7599	.57551	1.3100	5.7567

Appendix C

Scree Plots and Total Variance Explained Tables

Figure C1-Scree Plot from Exploratory Factor Analysis, Final Rotation for Survey Section A

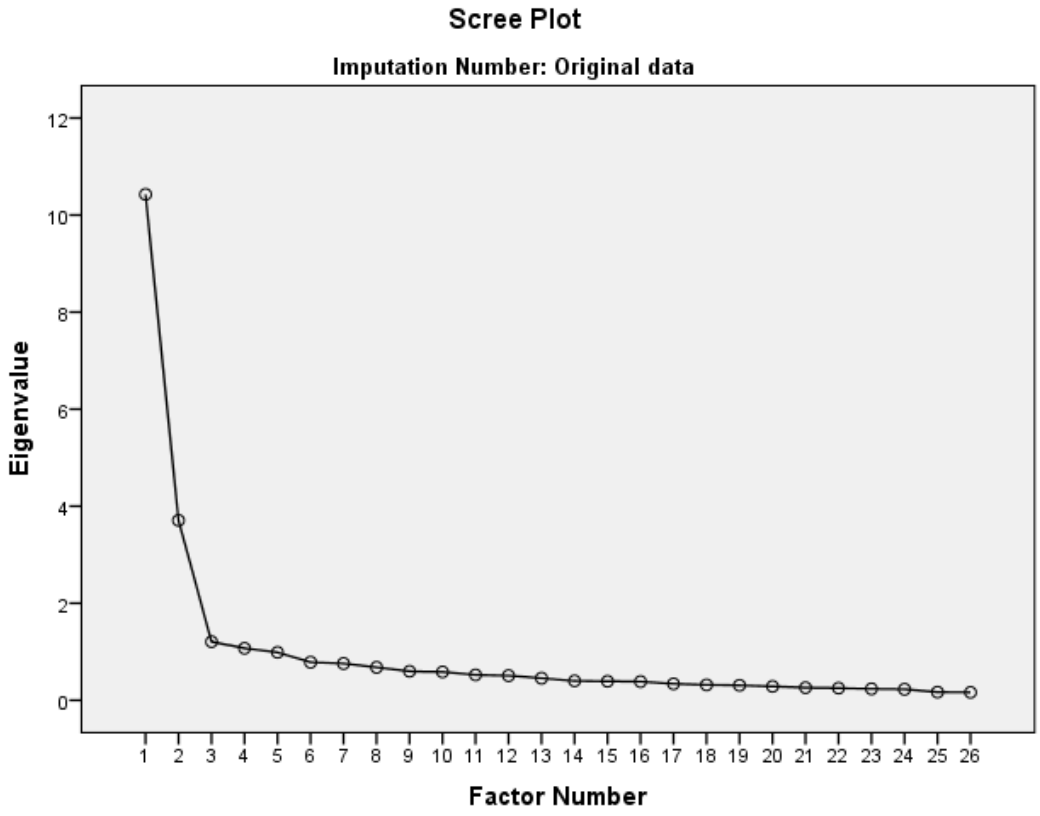

Table C1

Total Variance Explained for Final Factor Solution-Survey Section A

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.425	40.097	40.097	9.735	37.441	37.441
2	3.708	14.262	54.359	3.642	14.009	51.45
3	1.206	4.639	58.998	0.686	2.639	54.089
4	1.071	4.12	63.118	0.336	1.293	55.382
5	0.986	3.793	66.911			
6	0.784	3.014	69.925			
7	0.757	2.91	72.835			
8	0.678	2.606	75.441			
9	0.596	2.293	77.734			
10	0.582	2.24	79.974			
11	0.523	2.013	81.987			
12	0.507	1.95	83.937			
13	0.455	1.749	85.685			
14	0.398	1.531	87.216			
15	0.391	1.504	88.72			
16	0.383	1.474	90.194			
17	0.339	1.305	91.499			
18	0.317	1.221	92.72			
19	0.308	1.183	93.903			
20	0.284	1.094	94.998			
21	0.26	1.001	95.999			
22	0.25	0.96	96.958			
23	0.235	0.905	97.863			
24	0.226	0.868	98.732			
25	0.168	0.645	99.376			
26	0.162	0.624	100			

Table C1-Total Variance Explained

Notes: Extraction Method: Maximum Likelihood.

[a] Imputation Number = Original data

Figure C2- Scree Plot from Exploratory Factor Analysis, Final Rotation for Survey Section B

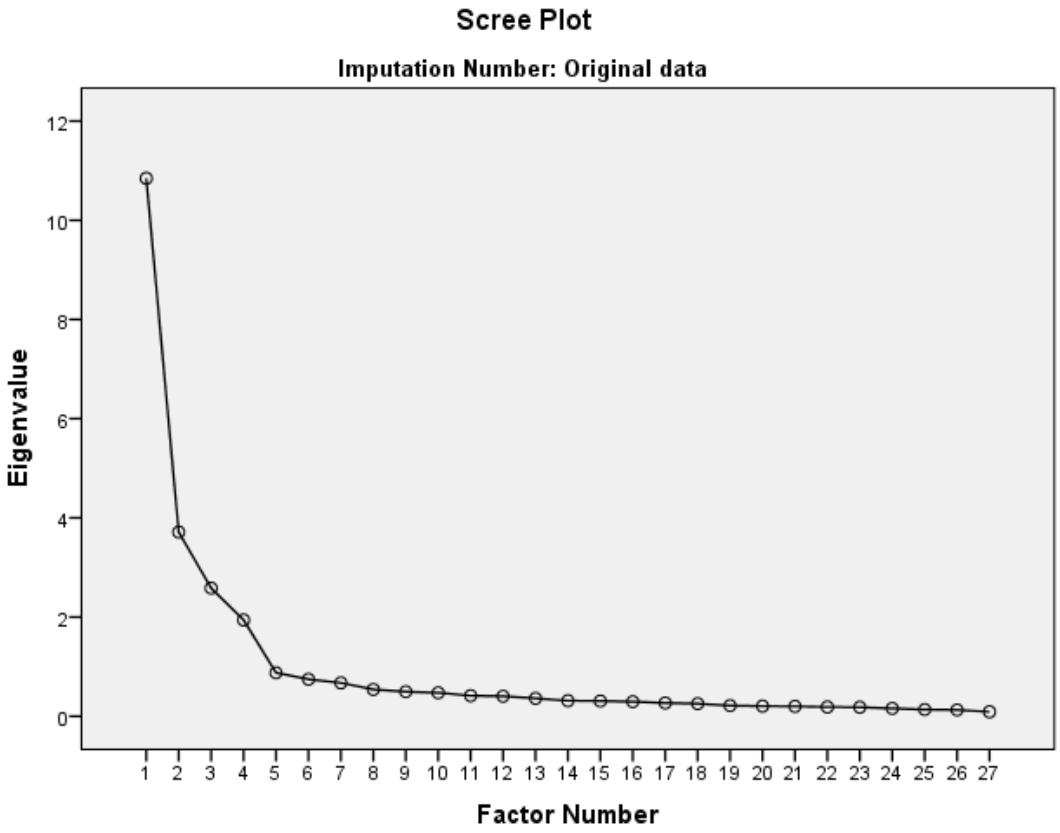

Table C2

Total Variance Explained [a] for Final Rotation- Survey Section B

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.846	40.169	40.169	10.061	37.262	37.262
2	3.713	13.753	53.923	3.266	12.097	49.359
3	2.583	9.566	63.488	2.512	9.304	58.664
4	1.941	7.19	70.678	1.964	7.275	65.938
5	0.877	3.248	73.926			
6	0.746	2.761	76.687			
7	0.673	2.492	79.179			
8	0.54	1.999	81.179			
9	0.495	1.835	83.014			
10	0.473	1.752	84.765			
11	0.414	1.534	86.299			
12	0.404	1.498	87.797			
13	0.361	1.337	89.134			
14	0.313	1.16	90.294			
15	0.306	1.134	91.429			
16	0.294	1.088	92.517			
17	0.269	0.995	93.511			
18	0.254	0.939	94.451			
19	0.214	0.794	95.245			
20	0.205	0.758	96.003			
21	0.199	0.737	96.74			
22	0.186	0.689	97.429			
23	0.182	0.672	98.101			
24	0.159	0.588	98.689			
25	0.136	0.503	99.192			
26	0.128	0.473	99.665			
27	0.091	0.335	100			

Table C2: Total Variance Explained

Notes: Extraction Method: Maximum Likelihood.

[a] Imputation Number = Original data

Figure C3- Scree Plot from Exploratory Factor Analysis, Final Rotation for Survey Section C

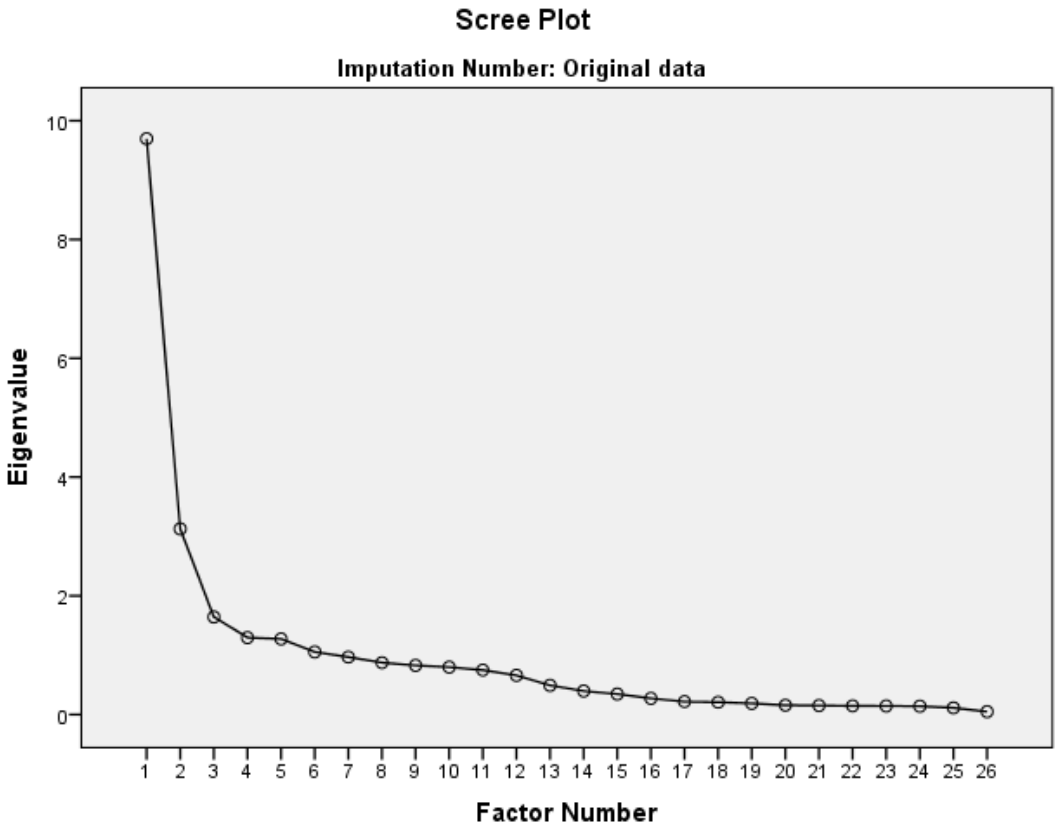

Table C 3

Total Variance Explained [a] for Final Rotation- Survey Section C

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.698	37.299	37.299	4.339	16.687	16.687
2	3.128	12.029	49.328	5.51	21.193	37.88
3	1.643	6.321	55.649	1.938	7.453	45.333
4	1.296	4.984	60.633	2.336	8.985	54.318
5	1.275	4.902	65.536	0.847	3.256	57.574
6	1.054	4.055	69.591	0.846	3.255	60.829
7	0.968	3.724	73.315			
8	0.875	3.364	76.679			
9	0.829	3.187	79.866			
10	0.799	3.072	82.938			
11	0.75	2.885	85.823			
12	0.66	2.537	88.36			
13	0.492	1.891	90.251			
14	0.397	1.526	91.777			
15	0.345	1.327	93.104			
16	0.273	1.049	94.153			
17	0.218	0.839	94.993			
18	0.208	0.801	95.794			
19	0.188	0.724	96.518			
20	0.158	0.608	97.126			
21	0.152	0.586	97.712			
22	0.146	0.563	98.275			
23	0.144	0.554	98.829			
24	0.141	0.542	99.372			
25	0.114	0.437	99.809			
26	0.05	0.191	100			

Table C3 Total Variance Explained

Notes: Extraction Method: Maximum Likelihood.

[a] Imputation Number = Original data

Figure C4- Scree Plot from Exploratory Factor Analysis, Final Rotation for Survey Section D

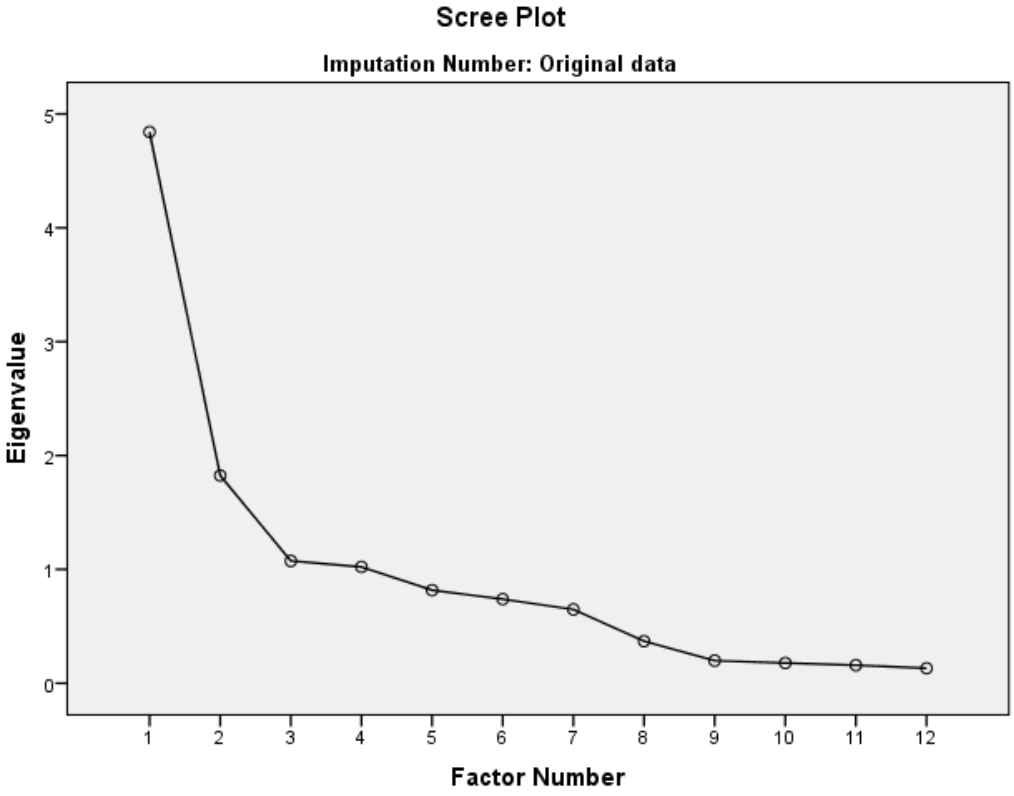

Table C 4

Total Variance Explained[a] for Final Rotation- Survey Section D

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.837	48.37	48.37	3.7	37.001	37.001
2	1.683	16.826	65.196	2.148	21.483	58.484
3	1.039	10.389	75.585			
4	0.752	7.522	83.107			
5	0.643	6.434	89.541			
6	0.372	3.725	93.266			
7	0.203	2.034	95.3			
8	0.178	1.78	97.08			
9	0.162	1.618	98.698			
10	0.13	1.302	100			

Extraction Method: Maximum Likelihood.

[a] Imputation Number = Original data

Figure C5- Scree Plot from Exploratory Factor Analysis, Final Rotation for Survey Section E&F

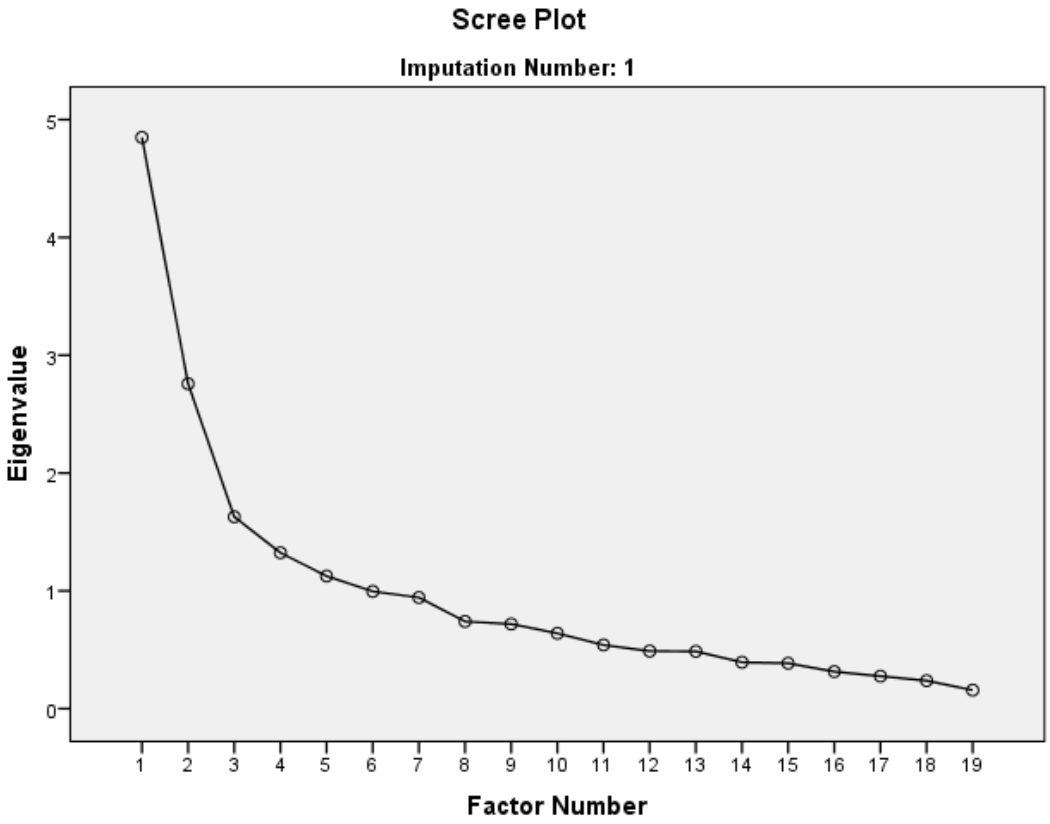

Table C 5

Total Variance Explained[a] for Final Rotation- Survey Section E&F

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.849	25.52	25.52	1.365	7.183	7.183
2	2.757	14.513	40.033	4.098	21.566	28.75
3	1.628	8.571	48.604	2.45	12.896	41.645
4	1.323	6.965	55.569	1.233	6.489	48.134
5	1.125	5.923	61.492	0.622	3.271	51.406
6	0.995	5.239	66.731			
7	0.944	4.967	71.698			
8	0.74	3.895	75.593			
9	0.718	3.78	79.373			
10	0.639	3.365	82.738			
11	0.54	2.845	85.583			
12	0.489	2.574	88.157			
13	0.486	2.559	90.716			
14	0.394	2.072	92.788			
15	0.385	2.028	94.816			
16	0.315	1.657	96.472			
17	0.276	1.451	97.924			
18	0.237	1.249	99.173			
19	0.157	0.827	100			

Table C5
Extraction Method: Maximum Likelihood.
a. Imputation Number = 1

Appendix D
Eliminated Survey Items by Section

Section	Survey Item
Section A	A3: How many of your classes at this institution do you feel have been too large for you to learn effectively?
	A4: In how many of your classes at this institution have you had difficulty understanding the spoken English of an instructor
	A5: Which of the following choices best reflects your primary source for academic advising during your sophomore year?
Section B	B5d: Please rate your satisfaction with each of the following: Availability of equipment and software in university computer labs to meet my needs
	B5e: Please rate your satisfaction with each of the following: Availability of wireless access on campus
	B5f: Please rate your satisfaction with the following: Online course management system(s) used in my classes
	B5g: Please rate your satisfaction with the following: Effectiveness of information technology in improving my learning experience
Section C	C1f: These next questions ask for your opinion about the services provided by various other offices on campus, Health Services
	C1l: These next questions ask for your opinion about the services provided by various other offices on campus, Campus Police Department
	C2f: These next questions ask for your opinion about the staff associated with various other offices on campus, Health Services
	C2l: These next questions ask for your opinion about the staff associated with various other offices on campus, Campus Police Department
	C3a: How satisfied are you with the ease with which you can navigate through the following online services?: Billing system
	C3b: How satisfied are you with the ease with which you can navigate through the following online services?: Financial Aid
	C3c: How satisfied are you with the ease with which you can navigate through the following online services?: Course Registration System
Section D	D3: If you observed someone on campus behaving suspiciously or in a threatening manner, would you know how to report it?
	D4: If you observed someone on campus behaving suspiciously or in a threatening manner, how likely would you report it to a campus authority?
Section F	F2: While school has been in session this academic year, about how many hours per week have you spent working for pay on campus?

Appendix E
Final Factor Structure communality Tables

Table E1

Communalities[a] for Survey Section A

Survey Item	Extraction
Question A1a: Instructor's Ability to Motivate	0.509
Question A1b: Explain Expectations	0.4734
Question A1c: Explain Course Mat	0.4932
Question A1d: Encourage Discussion	0.4306
Question A1e: Instructional Tech	0.4152
Question A1f: Quick Feedback	0.3926
Question A1g: Helfpul Feedback	0.4882
Question 2a: Valuable Learning	0.4172
Question 2b: Interest Intended Field	0.4088
Question 2c: Free Exploration	0.417
Question 2d: Encouraged Questions	0.5398
Question 2e: Meaningful Answers	0.6128
Question 2f: Share Ideas	0.5472
Question 6a: Accessibility Advisor	0.6344
Question 6b: Time Advising	0.6418
Question 6c: Advisor Concern	0.7792
Question 6d: Advisor Acad Progress	0.7432
Question 6e: Knowledge of Univ Rules Procedures	0.6904
Question 6f: Info on Programs	0.4922
Question 6g: Major Knowledge	0.6892
Question 6h: Gen Ed Knowledge	0.6812
Question 6i: Non-Academic Prob	0.6636
question 6j: Educational Enrichment	0.6406

Table E1

Notes: Extraction Method: Maximum Likelihood

[a] Pooled Results

Table E2

Communalities[a] for Survey Section B

Survey Item	Extraction
Question B1a: Availability	0.1918
Question B1b1: Tutoring Writing	0.2556
Question B1b2: Tutoring Reading	0.313
Question B1b3: Tutoring Math	0.2732
Question B1b4: Tutoring Science	0.2296
Question B1b5: Tutoring Foreign Lang	0.2786
Question B1b6: Tutoring Study	0.3132
Question 3a: Helpfulness of Staff	0.476
Question 3b: Individual study space	0.484
Question 3c: Group study space	0.4552
Question 3e:Access to databases	0.6904
Question 3f: Access to Online Res	0.6806
Question 3h: Effectiveness	0.6722
Question 4a: Helpfulness of Staff	0.7862
Question 4b: Info on internships	0.868
Question 4c: Access to employment	0.8488
Question 4d: Interview Prep	0.8244
Question 4e: Online Resources	0.8242
Question 5a: IT Training	0.3688
Question 3f: Resource Training	0.4944
Question 3g: Hours of Operation	0.449
Question 5c: Hours of Operation	0.3192
Question e: Availability Wireless	0.2394
Question 5f: Online CM	0.236

Table E2

Notes: Extraction Method: Maximum Likelihood

[a] Pooled Result

Table E3

Communalities[a] for Survey Section C

Survey Items	Extraction
Question C1a: Financial Aid	0.6662
Question C1b: FA Disbursement	0.663
Question C1c: Cashier/Billing	0.3504
Question C1d: Registrar	0.3104
Question C1e: Bookstore	0.2384
Question C1f: Health Services	0.307
Question C1g: Counseling	0.2976
Question C1h: Residence Life	0.5098
Question C1i: Campus Rec	0.5062
Question C1j: Dining Services	0.4306
Question C1k: Oncampus Transp	0.3796
Question C1l: Police Dept	0.322
Question C2a: Financial Aid Staff	0.891
Question C2b: FA Disbursement St	0.8942
Question C2c: Cashier Staff	0.512
Question C2d: Registrar Staff	0.4136
Question C2e: Bookstore Staff	0.28
Question C2f: Health Services Staff	0.3454
Question C2g: Counseling Staff	0.3436
Question C2h: Residence Life Staff	0.547
Question C2i: Campus Rec Staff	0.5306
Question C2j: Dining Services Staff	0.4678
Question C2k: Oncampus Trans Staff	0.4228
Question C2m: Parking Staff	0.2726
Question C3b: Online Fin AId	0.4346

Table E3

Notes: Extraction Method: Maximum Likelihood

[a] Pooled Result

Table E4

Communalities[a] for Survey Section D

Survey Items	Extraction
Question D1a: Residence Hall Day	0.396
Question D1b: Reisdence Hall Night	0.4422
Question D1c: Parking Lot Day	0.4798
Question D1d: Parking Lot Night	0.5344
Question D1e: Non-RH Day	0.5874
Question D1f: Non-RH Night	0.6204
Question D1g: Grounds Day	0.5444
Question D1h: Grounds Night	0.5544
Question D1a: Info Crime Oncampus	0.7846
Question D2b: Crime Prevention Info	0.8492

Table E4

Notes: Extraction Method: Maximum Likelihood

[a] Pooled Result

Table E5

Communalities[a] for Survey Section E&F

Survey Items	Extraction
Question E1a: How often in a typical year do you attend or participate in each of the following campus activities?: Workshops, seminars, speakers etc. outside of class	0.5852
Question E1b: How often in a typical year do you attend or participate in each of the following campus activities?: University sponsored art events (e.g. plays, musical performances, exhibits)	0.625
Question E1c: How often in a typical year do you attend or participate in each of the following campus activities?: Multicultural/diversity events and programs	0.7112
Question E1d: How often in a typical year do you attend or participate in each of the followig campus activities?: Community service/volunteer work	0.4686
Question E1e: How often in a typical year do you attend or particpate in each of the following campus activities?: Intramural activities (including clubs and recreational sports)	0.4182
Question E1f: How often in a typical year do you attend or participate in each of the following campus activities?: Co-curricular activities (e.g. University sponsored student organizations, student government, Greek Life)	0.448
Question E1g: How often in a typical year do you attend or participate in each of the following campus activities?: Intercollegiate Athletic Events	0.3806
Question E2a: Please rate your overall satisfaction with weekend activities on campus for students	0.4502
Question E2b: Please rate your overall satisfaction with the ease with which I can get invovled in campus organizations	0.7164
Question E2c: Please rate your overall satisfction with the ease with opportunities on campus to interact with or learn from people from a range of racial/ethnic or cultural backgrounds	0.7446
Question E2d: Plese rate your overall satisfction with opportnities on campus to develop leadership skills	0.7518
Question F1a: To what extent do you agree or disagree with each of the following: I am confident that I made the right decision to attend this university	0.8062

Table E5 Communalities Table

Table E5 Continued

Communalities[a] for Survey Section E&F

Survey Items	Extraction
Question F1b: To what extent do you agree or disagree with each of the following: I believe I was academically prepared to attend this institution	0.2036
Question F1c: To what extent do you agree or disagree with each of the following: I feel I belong at this institution	0.8746
Question F1d: To what extent do you agree or disagree with each of the following: I will have the financial resources I need to finish college	0.198
Question F2: While school has been in session this academic year, about how many hours per week have you spent working for pay on campus?	0.0786
Question F3: While school has been in session this acadeic year, about how many hours per week have you spent working for pay off campus?	0.1914
Question F4: How does our job affect your school work?	0.999
Question F5: Which of the following best describes your current educational plans?	0.168

Table E5

Notes: Extraction Method: Maximum Likelihood

[a] Pooled Result

Appendix F

Correlation Matrix for Independent Variables

Table F1

Correlations for Independent Variables

	Academic Preparation	Satisfaction w/ Advising Relationship	Classroom Envirnmt	Satisfaction w/ Support Services	Satisfaction w/ Library Academic Support	Satisfaction w/ Campus Environment	Satisfaction w/ Financial Guidance	Satisfaction w/ Mental Health Services	Perception of Safety	Perception of Crime	Co-curricular Engagement	Peer Engagement	Sense of Belonging	Ever Received Pell
Academic Preparation	1													
Satisfaction w/ Advising Relationship	0.011	1												
Satisfaction w/ Classroom Environment	.048*	.519**	1											
Satisfaction w/ Support Services	-.147**	.163**	.239**	1										
Satisfaction with Library Academic Support	.041*	.262**	.373**	.408**	1									
Satisfaction with Campus Environment	.121**	.312**	.351**	.374**	.457**	1								

Table F1 Correlations Table

Table F1 Continued
Correlations for Independent Variables

	Academic Preparation	Satisfaction w/ Advising Relationship	Classroom Environment	Satisfaction w/ Support Services	Satisfaction w/ Library Academic Support	Satisfaction w/ Campus Environment	Satisfaction w/ Financial Guidance	Satisfaction w/ Mental Health Services	Perception of Safety	Perception of Crime	Co-curricular Engagement	Peer Engagement	Sense of Belonging	Ever Received Pell
Satisfaction with Financial Guidance	-.069**	.219**	.245**	.375**	.287**	.438**	1							
Satisfaction with Mental Health Services	-.092**	.152**	.153**	.425**	.248**	.476**	.473**	1						
Perception of Safety	.214**	.236**	.258**	.145**	.355**	.490**	.151**	.174**	1					
Perception of Crime	-.089**	.326**	.374**	.181**	.279**	.285**	.226**	.155**	.320**	1				
Co-curricular Engagement	-0.02	.096**	.157**	.331**	.244**	.336**	.230**	.261**	.222**	.079**	1			
Peer Engagement	.122**	.320**	.464**	.270**	.371**	.467**	.254**	.200**	.349**	.340**	.396**	1		
Sense of Belonging	.165**	.369**	.524**	.146**	.289**	.366**	.157**	.095**	.313**	.312**	.163**	.544**	1	
Ever Received Pell	-.165**	-0.011	-0.012	.043**	.029*	-.049**	.299**	.045**	-.102**	0.009	.056**	-.056**	-.101**	1

Table F1 Correlation Matrix
Notes: *indicates significance at the .05 level **indicates significance at the .001 level