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Choosing to succeed: An exploration of the relationship between college choice and freshman retention

James Tomlin Walke
William & Mary - School of Education

CHOOSING TO SUCCEED: AN EXPLORATION OF THE RELATIONSHIP BETWEEN COLLEGE CHOICE AND FRESHMAN RETENTION

A Dissertation

Presented to

The Faculty of the School of Education

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Doctor of Philosophy

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by

James Tomlin Walke
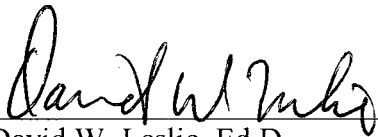
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CHOOSING TO SUCCEED: AN EXPLORATION OF THE RELATIONSHIP

BETWEEN COLLEGE CHOICE AND FRESHMAN RETENTION

by

James Tomlin Walke

Approved March 2010 by

David W. Leslie, Ed.D.
Chairperson of Doctoral Committee

Dorothy E. Finnegan, Ph.D.

Daina P. Henry, Ed.D.

DEDICATION

For their support and inspiration, this dissertation is dedicated to my incredible wife,

Chadra Dalan, and my two beautiful sons, James Carlton and Chaden Timothy.

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ACKNOWLEDGEMENTS

Drs. Pascal Barreau and Kianga Thomas, my fraternity brothers and colleagues in the School of Education. I am grateful for the friendships we have developed and indebted for the assistance you provided during the final st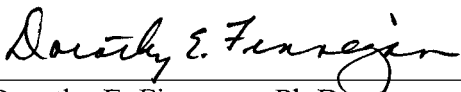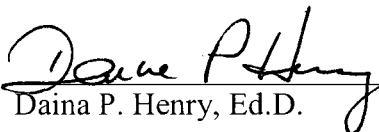ages of this endeavor. The critiques each of you offered resulted in a much stronger dissertation than I could have produced on my own. Thank you for demonstrating true brotherhood and ensuring that our dear fraternity truly is the school for the better making of men.

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I am as smitten with you now as the day we met. Je t'aime.

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ABSTRACT

CHOOSING TO SUCCEED: AN EXPLORATION OF THE RELATIONSHIP BETWEEN COLLEGE CHOICE AND FRESHMAN RETENTION

Student, James Tomlin Walke, Ph.D. The College of William and Mary in Virginia, 2010, 113 pp.

Chair: Professor Emeritus David. W. Leslie

This quantitative study was designed to explore the relationship between college choice and retention processes and to extend current understandings of retention at historically black colleges and universities (HBCUs). Logistic regression analyses were utilized to assess the relationship between student responses to the ASQ Plus® survey, an instrument assessing college choice measures, and freshman retention outcomes.

Findings validated the college choice-retention link. Several pre-matriculation measures of student expectations of the university were related to moderate increases in the odds of being retained. The amount and types of financial aid received emerged as the strongest predictors of freshman retention outcomes.

CHOOSING TO SUCCEED: AN EXPLORATION OF THE RELATIONSHIP

BETWEEN COLLEGE CHOICE AND FRESHMAN RETENTION

CHAPTER I

Norfolk State University is a unique institution; an historically black university (HBCU)[1] born of Virginia's segregated higher education system (Adams v. Richardson, 1973; Office of Civil Rights, 1991; Dalton, 1978). Established in 1935 as a teacher's college, the University was one of two public institutions in the Commonwealth providing higher education to African Americans. During second half of the 20th century the University grew in scope and mission even as the state and federal higher education environments evolved to permit increased opportunities and options for African Americans students. Throughout these changes providing access to African American students has remained the University's core mission (Brooks, 1983; NSU, 2004)[2]. The University has evolved from being one of the few opportunities available to African American students to an institution that competes for these students with local and regional peers. In this respect, the University's experience mirrors that of many public HBCUs today. HBCUs capture a decreasing proportion of African American college student enrollments as they compete with predominantly white institutions and in some instances, community colleges, for African American students (Wilson, 1990).

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[1] HBCUs are postsecondary institutions established prior to 1964 whose historical and current missions are the education of African Americans (Brown et al., 2001; OCR, 1991; Roebuck & Murty, 1993).

[2] Early in its history, access at NSU was defined as providing postsecondary education opportunities to African American students. Today the notion of access has expanded to include providing opportunities for low-income, first generation, non-traditional students and those from underserved areas of the Commonwealth.

<u>Access, African American Students and HBCUs</u>

Because of their unique historical contexts and centrality in the story of African American higher education (Brown, 2002, 2003; Davis, 1998), the issue of access has special salience for HBCUs. The struggle for access to postsecondary educational opportunities has been the central theme for African American higher education (Brown, Donahoo & Bertrand, 2001). For much of early American history African Americans were effectively excluded from higher education (Anderson, 1988; Brown, et al., 2001; Brown & Hendrickson, 1997; OCR, 1991). Though postsecondary opportunities for African Americans grew in the late nineteenth century, black higher education was essentially a separate system unequal to that provided for white Americans (*Adams v. Richardson*, 1973; Brown et al., 2001; Allen & Jewel, 2002; Dalton, 1978; OCR, 1991). Historically black colleges and universities have been important instruments of access for African American students (Anderson, 1988; Brown et al., 2001; Davis, 1998; Holmes, 1934; OCR, 1991; Roebuck & Murty, 1993). As African American students gained access to a broader range of institutions, HBCUs enrolled smaller proportions of total black collegiate enrollment. Though the number of black students enrolled in college has increased, the proportion of African-American students enrolled at HBCUs has declined (Nettles & Perna, 1997; Sissoko & Liang-Rong, 2005). Ironically, HBCUs - the very institutions historically responsible for providing opportunity to African American students - today face stiff competition for these students from predominantly white institutions (Wilson, 1990).

At Norfolk State University, these changes are evident in recent enrollment trends. At the initiation of this study the University was in the midst of a sixteen year

enrollment decline. The University's fall 2006 headcount enrollment of 6,238 (NSU, 2008) represented a 28% decline in enrollment since fall 1992's headcount of 8,624 students (see figure 1).

Figure 1. Fall Headcount Enrollment Trends.
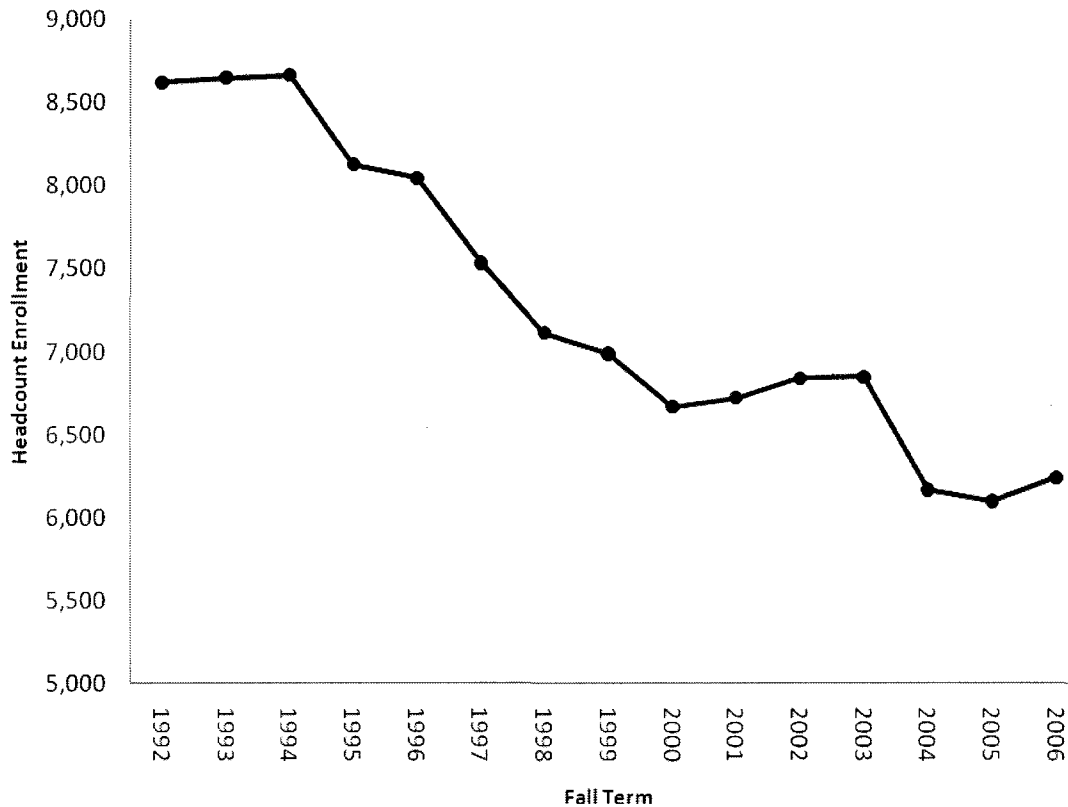
This decline occurred despite projected and realized growth in overall enrollment at Virginia's public four-year public schools (SCHEV, 2005). The enrollment declines carry significant ramifications for the University's fiscal viability, as 37% of the University's revenues are derived from tuition and fees. Enrollment growth is also an integral component of the University's strategy for dealing with the Commonwealth's

current budget shortfall and the funding reductions it entailed for the Commonwealth's

colleges and universities.

The University's enrollment declines coincided with increased competition for

African American students with two local institutions. Since 1992 the University's

enrollment of African American undergraduates declined while African American

undergraduate enrollments at Old Dominion University and Tidewater Community

College grew (see figure 2). This is noteworthy, as the University's enrollments have

been predominantly African American and local. In 2006, total enrollment was 85.6%

African-American with 59% coming from Hampton Roads[3].

Figure 2. African American Undergraduate Enrollment Trends.

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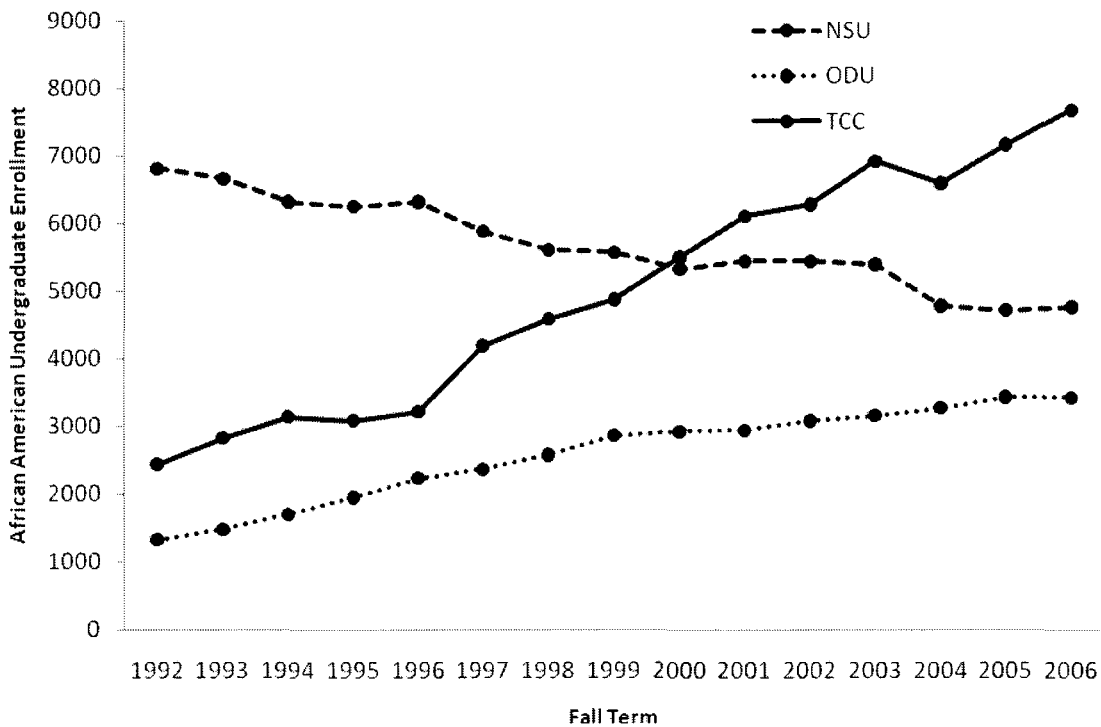
[3] The Hampton Roads region is comprised of the cities of Chesapeake, Hampton,
Newport News, Norfolk, Portsmouth, Suffolk and Virginia Beach, York County (includes
the city of Williamsburg) and Isle of Wright County.

Facing these enrollment declines and increased competition for its traditional student base, in 2004 the University identified enrollment growth and increased retention and graduation rates as strategic goals and called for the development of a comprehensive enrollment management plan (NSU, 2004). In that plan, the University recognized the importance of increasing retention rates as part of its efforts to increase enrollment (NSU, 2005). Even as the University addressed these two issues internally, the changing state political context also focused attention on enrollment and retention.

Keller (2001) identified access and accountability as two of the most important issues facing postsecondary institutions in the 21st century. For public institutions in the Commonwealth of Virginia, these challenges are manifested in the Higher Education Restructuring Act (2005). Under the Restructuring Act, institutions and the Commonwealth agreed to a relationship in which the state grants the institutions greater operational autonomy in exchange for working toward state higher education goals and submitting to accountability measures (Blake, 2006; Breneman & Kneedler, 2005). Among the goals articulated in the Restructuring Act are 1) providing in-state students access to the Commonwealth's public institutions, especially students from underrepresented populations (i.e., students from geographically underrepresented students, low income students, first generation students and racial/ethnic minorities) and 2) improving student retention and graduation rates. The Restructuring Act also resulted in the development of institutional performance standards, measures of each institution's progress toward the Commonwealth's higher education goals. In exchange for meeting negotiated targets on measures such as in-state student enrollments, underrepresented student enrollments, freshman retention rates and six year graduation rates, institutions

are entitled to increased state funding and greater autonomy in conducting their financial affairs. Institutions failing to meet performance thresholds forfeit eligibility for these benefits. The Restructuring Act was an important influence on the University's strategic outlook.

The university's mobilization to meet its internal strategic objectives and Restructuring Act performance standards entailed the creation of an Enrollment Management office. Led by a cabinet level senior administrator, the Enrollment Management office encompasses undergraduate admissions, registration, financial aid and institutional research (NSU, 2005). An enrollment management plan was published that, among other objectives, sought to understand and influence the enrollment decisions of prospective students. The University turned to student college choice as a framework to guide its efforts to increase new student enrollments. During the spring and summer of 2006 the University surveyed students admitted to the university as new freshmen using the College Board's Admitted Students Questionnaire Plus® survey (ASQ Plus). The goal of the survey was to understand the college choice decisions of the participants and to apply this knowledge to future efforts to influence the enrollment decisions of prospective students. This study used data from that survey administration to explore the relationship between college choice and freshman retention at Norfolk State University.

Statement of the Problem

As the pressures of increased competition for enrollment of African American students and state-mandated performance and accountability standards converged, Norfolk State University sought to grow enrollment by attracting more new students and improving the retention rates of its enrolled students. The institution viewed these

challenges as part of a continuum with student college choice at one end and retention at the other. In an effort to enroll more students and expand beyond its traditional prospect pool, the university administered a college choice survey to students admitted to the fall 2006 freshman class. The goal of the survey was to understand how prospective students perceived the University and to apply this knowledge to future efforts to influence the enrollment decisions of prospective students. As it sought to improve freshman retention rates the University was interested in predicting freshman retention outcomes at the earliest possible point of contact with new students. Specifically, the University wished to determine whether the college choice data collected improved the ability to predict retention outcomes.

Purpose of the Study: Research Questions

The purpose of this study is to determine if African American students' pre-matriculation perceptions of a public, urban, mid-sized, moderately selective historically black university are related to freshman retention outcomes. Pre-matriculation perceptions of the university were assessed using the ASQ Plus® survey.

This study addresses the following research questions:

1. What is the relationship between pre-matriculation perceptions of the institution and freshman retention?

2. What is the relationship between college search measures and freshman retention?

3. What is the relationship between the type and amount of aid received and freshman retention?

4. Is there a relationship between students' ranked enrollment preferences for the University and freshman retention?

Justification of the Study

This study addresses the call for research focused on HBCUs and their students (Brown, 2003; Brown & Freeman, 2002). Further, this study will extend the research literature by exploring links between college choice and student retention. As retention is a campus-based phenomenon (Astin, 1997; Berger & Lyon, 2005; Tinto, 1993) this study will expand the student populations (African Americans) and institutional types (public, four-year HBCU) represented in the choice and retention research literature. The present study will also add to the student retention prediction literature by investigating pre-matriculation independent measures.

Delimitations and Limitations of the Study

This study is intended to describe pre-matriculation factors related to persistence and is exploratory in nature. The study does not address the context of students' withdrawal decisions nor does it address students' perceptions of this context. The proposed study does not address how pre-matriculation expectations relate to post-matriculation experiences.

The study is limited in that it explores the college choice-retention relationship at one institution. Because this study focuses on retention as an institution-specific phenomenon, results will not necessarily generalize to other public HBCUs. Also, the study is limited to one entering freshman class. Though this study attempts to predict retention with pre-matriculation factors, retention is most strongly related to students' post-enrollment experiences and interactions with the university. New and renovated campus facilities, curricular changes, and increases in the amount of institutional aid subsequent to this study's cohort mean that more recent students are likely to have

different experiences and interactions with the university. Thus, any model of the choice-retention relationship at Norfolk State University derived from this study will likely need modification when applied to subsequent cohorts. Finally, the study uses the ASQ Plus ® Survey to operationalize pre-matriculation expectations.

Definition of Terms

College choice. The present study defines college choice as "a complex, multistage process during which an individual develops aspirations to continue formal education beyond high school, followed later by a decision to attend a specific college, university or institution of advanced vocational training" (Hossler, Braxton and Coopermsith, 1989, p. 234).

College selection. College selection (or selection decision) refers to a student's decision to enroll at a specific institution.

Freshman Cohort. The National Center for Education Statistics (NCES) defines freshman cohort as the group of fist-time, full-time, degree-seeking freshmen enrolled as of the institution's fall census date. Freshman retention rates and six year graduation rates reported to the Federal Department of Education are calculated for freshman cohorts.

Retention. The federal Department of Education defines retention as the proportion of freshman cohort members enrolled during a fall term who enroll at the same institution the subsequent fall term. This study defines freshman retention similarly: the proportion of study participants (first-time, degree-seeking freshmen enrolled fall 2006) who enrolled at the University for the fall 2007 term. The term persistence will be interchanged with retention throughout this study.

Summary

Norfolk State University is an HBCU with an historic mission of providing access to African American students. This mission is under threat as the general trend of HBCUs enrolling a decreasing share of African American students manifests itself at the University in the form of increased competition for African American undergraduates with two local institutions. In response to these competitive threats, the University adopted increased enrollment as a strategic goal. The enrollment growth goal was made concrete in two strategic objectives: increased enrollment of new students and higher retention rates for currently enrolled students. Even as competitive pressures focused the University's efforts on new student enrollment and retention, external mandates in the form of the Commonwealth of Virginia's Higher Education Restructuring Act (2005) also served to direct the university's attention to these two areas.

To address its enrollment and retention growth objectives, the University turned to college choice theory and retention theory, respectively. In 2006, the University undertook a survey of students admitted to the fall 2006 freshman class. The survey asked students about the factors important to their college choice decisions and their perceptions of the University. The University undertook the study with the hope of understanding and eventually influencing the college choice decisions of prospective students.

To address Norfolk State University's interests in increased new student enrollments and increased retention, this study explores the relationship between college choice and retention. Using data from the University's 2006 ASQ Plus® survey

administration, the study investigates the utility of college choice measures for predicting freshman retention outcomes.

Chapter II outlines a rationale for linking college choice and retention. Enrollment management is introduced as a conceptual framework that encompasses both college choice and freshman retention. Models of college choice and findings relevant to the college choice processes of African American students are reviewed. A broad review of retention theory is presented followed by a discussion of the literature linking college choice and retention. Chapter II concludes with a review of research literature on predictors of retention.

Chapter III's presentation of the study's methodology includes discussions of the study's purpose, the student population and sample under investigation, the research questions, instrument, analysis strategy and predictor variables. Chapter IV details results from the analysis described in Chapter III. The paper concludes with Chapter V's summary of the study, interpretation of results, discussion of the implications for NSU's retention efforts and suggestions for further study.

CHAPTER II

Mired in an extended period of declining enrollments, Norfolk State University identified enrollment growth as a strategic imperative. The University faced strong competition for African American undergraduates from two local institutions while the Higher Education Restructuring Act (2005) compelled it to increase its enrollment levels and retention rates. The University sought a way to approach these challenges in an integrated manner. The University viewed increased enrollment levels as a function of 1) enrolling more new students and 2) retaining a higher proportion of currently enrolled students. College choice theory provided a framework for the University's efforts to increase new student enrollments. Retention theory was the foundation of the University's retention efforts. Seeking a way to integrate these theoretical frames, the University turned to enrollment management as a framework to link college choice and retention.

Enrollment management refers to an organizational concept and a series of institutional activities and processes with twin aims: influencing characteristics of the student body and controlling the size of the student body (Hossler & Bean, 1990). The concept emerged as institutions dealt with projected enrollment declines in the early 1970s. Campus admissions officers were increasingly eager to identify prospective students and to retain a higher proportion of enrolled students (Hossler & Hoezee, 2001). Enrollment management links college choice and retention by providing institutions a

"conceptual and structural framework for directing institutional activities to attract and retain students" (Hossler & Bean, 1990, p.5).

Norfolk State University's efforts to attract new students included using the conceptual framework of college choice to better understand how potential students perceived the University. In keeping with the University's enrollment management orientation, college choice research initiatives were also linked to retention efforts, namely, predictive modeling projects aimed at identifying those students at greatest risk of attrition. Integrating college choice and retention analyses reflects the emerging literature base linking college choice and retention (Attinasi, 1989; Freeman, 1999b; Freeman & Thomas, 2002; Hossler, Braxton & Coopersmith, 1989; Stage & Hossler, 2000; Stage & Rushin, 1993; Villella & Hu, 1990).

College Choice

The concept of student college choice encompasses two interrelated concerns: who decides to go to college and where do they enroll (Greenough, 2003; Paulsen, 1990)? Interest in student college choice research flourished in the 1970s and 1980s as policy makers, researchers and institutions began to address projected declines in postsecondary enrollments (Centra, 1980; Chapman, 1981; Hossler, Braxton, & Coopersmith, 1989; Paulsen, 1990); explore the effects of increased federal student financial aid on postsecondary enrollment levels (Foley, 1997; Hossler et al., 1989); and address declines in postsecondary participation among black high school graduates (Foley, 1997; Hossler et al., 1989). Investigators and theorists have approached college choice from multiple perspectives, including sociology, economics and psychology (Hanson & Litten, 1982; Hossler, Braxton & Coopersmith, 1989; Hossler, Schmidt &

Vesper, 1999; Jackson, 1982; Paulsen, 1990). Several models of student college choice that combine these theoretical perspectives have emerged. Because these combined models come from an action research perspective, they are well-suited guides to institutional analyses concerned with intervention in the college choice process (Hosser, Braxton and Coopersmith, 1989).

Chapman's (1981) student college choice model identified factors related to students' selection of an institution to attend. The model was one of the first geared toward institutional audiences and their efforts to influence enrollment decisions rather than public policy makers. The model posits that student characteristics interact with external influences and institutional characteristics to form expectations of college life which lead to the student's selection of a school to attend. While the model notes the importance of student background characteristics such as SES, ability and significant support persons, its primary focus is the interactions between students and schools. Because some institutional characteristics are not likely to change quickly (e.g., location, cost) the model suggests that recruiting efforts are the best lever to influence the enrollment decisions of prospective students.

Chapman's (1981) elucidation of factors related to a student's ultimate selection decision and recognition of an institution's potential to influence this decision were important contributions to the college choice literature. However, the model is limited in that it does not address the *process* through which students come to make their college selection decisions. Another important shortcoming of the Chapman model is its generality. Chapman specified that his model was best suited to predict choices of

traditional age (i.e., 18 – 21) but failed to consider the relevance of his model for different student groups (e.g., race, gender, first generation, etc).

Building upon Chapman (1981), Litten (1982) presented a stage model of the college choice process that incorporated the concept of market segmentation. Litten examined college choice processes and how these processes differed for various student groups at different points. Litten identified three phases of the college choice process: developing the desire to attend and making the decision to attend; investigating potential schools; and applying to schools, gaining acceptance and enrolling at an institution. Litten (1982) looked at differences in the college choice process by race, sex, ability level, parents' education and geographic location. Differences by race, gender and ability level were reported. Compared to white students, black students' selection processes began later, lasted longer, finished later and considered more schools. Students of higher ability started the selection process sooner, decided on application schools sooner and tended to apply to more schools. Higher ability students also differed in the sources of information used in the selection process, relying on counselors as an information source more than lower ability students (Litten, 1982). Hanson and Litten (1982) later extended the application of market segmentation in choice research by focusing on gender in their review of college choice literature. Women were reported to begin the selection process earlier than men.

Jackson (1982) also addressed the process of college choice with a three stage model from a student-centered perspective that contrasted the institutional perspective of earlier choice process models (Hossler, Vesper & Schmidt, 1999). In it, students first develop a preference for college attendance in the preference stage; then develop a set of

schools for consideration – the choice set – in the exclusion stage; finally, students evaluate the institutions in their choice set and make a selection during the evaluation stage.

Hossler and Gallagher (1987), building upon Litten (1982) and Jackson (1982), offered a three stage model of college choice: predisposition, search and choice. During the predisposition phase students determine whether or not to pursue education beyond high school. During the search phase students gather information about colleges and develop a choice set – the group of schools to which they will apply. During the choice stage, students select an institution to attend from among the choice set schools to which they were admitted. The Hossler and Gallagher model is the most frequently cited model in more recent college choice empirical studies.

The college choice stage research literature has yielded student characteristics related to college choice including SES (Bishop, 1977; Christensen, Weisbrod & Melder, 1975; Jackson, 1988; Kohn, Manksi & Mundel, 1976; St. John, 1990), parental educational attainment (Cabrera & La Nasa, 2001; Manski & Wise, 1983; Stage & Hossler, 1989; Tuttle, 1981), father's occupational status and family size (Conklin & Dailey, 1981), student ability (Conklin & Dailey, 1981; Manksi & Wise, 1983; Mere, 1980; Peters, 1977; Rumberg, 1982; Tuttle, 1981; Zemski and Oedel, 1983), high school achievement (Leslie, Johnson & Carlson, 1977; Carpenter & Fleishman, 1987; Davis & Kandel, 1981), student educational aspirations (Hossler, Schmidt & Vesper, 1999; McDonough, 1997) high school curriculum (Borus & Carpenter, 1984; Conklin & Dailey, 1981), race (Jackon, 1988; Litten, 1982; Manski & Wise, 1983; Tuttle, 1981) gender (Hansen &Litten, 1982), parental encouragement (Conklin & Dailey, 1981;

Radner & Miller, 1975), peers' educational plans (Manksi & Wise, 1983) and encouragement from school personnel (Portes & Wilson, 1976; Conklin & Dailey, 1981). Though it is clear that race impacts college choice processes (Litten, 1982; Teranishi, Ceja, Antonio, Allen & McDonough, 2004) comparatively little is known about the choice processes of African American students (Perna, 2000b). Findings relevant to the college choice processes of African American students are summarized below.

Predisposition Phase

Bateman and Hossler (1996) investigated the development of plans to attend college among African American and white students from twenty-one Indiana high schools. Though there were similarities, racial differences emerged in correlates of plans to attend college. Parental expectations were the strongest correlate of college attendance plans for all students in the study, though the correlation was stronger for white students. Student ability was the next strongest correlate for all groups except African American women, for whom mother's educational level was the second strongest predictor. Gender differences emerged among the African American students. African American women planned to pursue higher levels of education than any other group in the study while African American men planned the lowest levels of education.

Freeman (1999a) espoused the importance of understanding factors related to predisposition in a racial/cultural context. Data were derived from structured interviews with 70 African American high school students in grades 10 – 12 in five major cities with large African American populations. Student responses to questions about their college choice processes highlighted the ways race impacts predisposition. For instance, parental education levels have been linked to plans to attend college (Conklin & Dailey,1981;

Manski & Wise, 1983; Stage & Hossler, 1989). Students in this study indicated a much broader sphere of influence from family members. Most interestingly, family members who had not attended college positively influenced plans to attend college for students in the study.

Building upon these differences, Freeman (2005) demonstrated that the Hossler and Gallagher (1987) model overestimates the predisposition of African American students when student aspiration and ability are taken into account. Based on this finding, she argued that the Hossler and Gallagher model fails to account for differences in the ways families influence children's college choice processes across different cultural groups. To better accommodate familial influences on the choice processes of African American students, Freeman argued the Hossler and Gallagher model should be expanded to include notions of cultural capital (e.g., family and kinship influences, characteristics of the school). She revised the Hossler and Gallagher model to incorporate cultural capital. Including measures of cultural capital improved the models' ability to predict college predisposition of African American students. These findings were validated by Muhammad (2008) who found that high school counselors exerted a positive influence on students' college aspirations for students in the 1988 National Educational Longitudinal Study (NELS:88). Perna (2000a) showed that cultural capital improves the ability to predict college enrollment for African American, Hispanic and white students.

Search Phase

Using structured interviews of African American high school students in five major U.S. cities, Freeman (1999b) examined African American students' considerations

of HBCUs and predominantly white institutions (PWIs). Students' emphasis on attending an HBCU tended to vary based on their high school composition. Students in primarily black or minority high schools tended to put less emphasis on attending an HBCU than those students attending primarily white high schools. Additionally, "considerations of higher education institution types…appeared to be greatly influenced by the type of experiences they encountered within their schools and whether or not they had a HBCU connection through family friends or teachers" (Freeman, 2005, p.103).

Smith and Fleming (2006) concerned with the gender enrollment gap for African American students, looked at the influence of parents on students' choice processes during the search stage. While African American parents provided encouragement and active support to their sons and daughters, they were more likely to encourage their daughters than their sons toward four year schools.

Selection Phase

Hartnett (1970) explored differences in ability and attitudinal measures for black students enrolled at HBCUs and PWIs. Black students at PWIs had higher mean SAT-V scores than those at HBCUs. Students at PWIs were also more likely to come from higher SES families than those at HBCUs. Using the College Student Questionnaire to assess attitudinal measures, Hartnett reported differences between students attending the two institution types. Students at PWIs tended to be more independent of family and peers, more politically liberal and more likely to express concerns over poverty and social justice than those attending HBCUs. Summarizing his findings, Hartnett concluded "it would appear that to the extent integrated institutions are attracting the higher ability

Negro students, they are also attracting those with a quite different set of attitudes, background characteristics, and orientations toward college" (p. 419).

Kim (2004) explored racial differences in the effects of financial aid on attendance at students' first choice institution. Specifically, the study addressed how the type of financial aid received (grants and scholarships, loans or a combination of the two) affected enrollment at the students' first choice institution. While financial aid type did impact the first choice attendance of white and Asian students, none of the three aid type categories influenced African Americans' attendance at their first choice institution.

Hurtado and her colleagues (199 7) investigated all three phases of the Hossler and Gallagher model using the National Education Longitudinal Study (NELS: 88/92) and the Beginning Postsecondary Student Longitudinal Study (BPS: 90/92) data sets. In contrast to other students, parental income exerted a stronger influence on student predisposition to college than parental education levels for African American students. The size of initial choice sets for African American students were comparable to those of white and Asian students. However, for African American students the size of the choice sets declined as students assigned greater importance to an institution's social climate. This pattern was reversed for white students. Finally, black students were less likely than white students to attend their first choice institution.

The college choice research literature has clearly established differences in all three stages of the choice process by racial/ethnic group and validates the need for investigations that explicitly account for minority groups. The literature has also demonstrated differences in college choice processes within African American students.

Retention

Modern interest in retention began when college enrollments began to decline in the early 1970s. Similar to college choice, theorists have approached retention from several perspectives including economics (Cabrera, Stampen & Hansen, 1990), organizational theory (Bean, 1980), psychology (Astin, 1984; Bean & Eaton, 2000) and sociology (Bean & Metzner, 1985; Berger, 2000; Kuh & Love, 2000). The most influential retention theory is Tinto's (1975, 1993) interactionalist theory of student departure (Braxton & Hirschy, 2005; Braxton, Sullivan & Johnson, 1997). Tinto's work stemmed from Emile Durkheim's (1951) concept of egoistical suicide which "arises when individuals are unable to become integrated and establish membership within the communities of a society" (Tinto, 1987, p. 101). Tinto characterizes departure decisions as a function of a student's commitment to the goal of graduating from college, commitment to the institution and the student's integration into the institution's social and academic spheres.

In the Tinto model, students enter college with individual characteristics that influence the departure process – family background factors (SES, parental education levels, and parental expectations), individual attributes (academic ability, race, and gender) and pre-collegiate schooling experiences (characteristics of postsecondary institution, record of postsecondary achievement). These characteristics influence departure decisions directly and they influence initial commitments to the goal of graduation and to the particular institution. These commitments are the primary roots of departure as they "not only help set the boundaries of individual attainment but also serve

to color the character of individual experiences with the institution following entry (Tinto, 1993, p.37).

Initial commitments to the institution and the goal of graduation exist in a reciprocal relationship with social and academic integration: Initial commitments influence early experiences at the institution; these early experiences influence the student's integration into the social and academic systems of the institution. Social and academic integration influence subsequent commitments to the goal of graduation and to the institution. As students become better integrated into the social and academic realms of the institution, subsequent commitments to the goal of graduation and to the institution are strengthened. The likelihood of a student persisting at the institution increases as the student's commitments to the goal of graduation and to the institution are strengthened (Tinto, 1975, 1993).

Serious challenges have been launched against Tinto's theory on epistemological grounds (Tanaka, 2002; Tierney, 1992). Tierney challenged the concept of integration for students from non-majority groups. Tinto's formulation of integration entailed students disengaging from other membership groups (e.g., family, cultural) outside of the institution. Tinto's conceptualization of students separating from outside affiliations in order to integrate into the institution's academic and social spheres is alleged to lack sensitivity to students from cultural groups for whom maintenance of strong familial bonds is an important value. Tanaka (2002) decried the lack of student voice in the model, particularly for students of color. The model's validity with non-white students has also been challenged (Attinasi, 1989; Tierney, 1992). Further, empirical support for the model has been mixed (Braxton & Lee, 2005).

These concerns in combination with the Tinto model's emphasis on post-matriculation student-institution interactions bring into question the relevance of the model for the current study's emphasis on pre-matriculation factors and African American students. Despite the limited applicability of his theory of student departure to the present study, Tinto (1975, 1993) has much to offer.

Tinto (1993) is helpful to the present study for the ways he encourages us to think about retention. Most importantly, Tinto established student retention as a longitudinal process that begins before students arrive on campus. Tinto also points our attention to the importance of the first year, as more than half of all attrition occurs within the first year. He is also responsible for introducing subtle distinctions such as institutional versus system departures (those students who fail to persist at a particular institution but remain enrolled elsewhere within a defined system and those who fail subsequently to enroll anywhere), the nature of attrition (voluntary/involuntary) the ways institutional characteristics influence attrition (residential versus commuter campuses, two year versus four year schools), and differences between the departure of traditional and non-traditional students. Tinto and others (Pascarella & Terenzini, 1983) place most emphasis on post-matriculation experiences. However, they also acknowledge the role of pre-matriculation experiences in persistence outcomes. Most relevant to this study is Tinto's notion of incongruence defined as "the state where individuals perceive themselves as being substantially at odds with the institution" (1993, p.50). Tinto (1993) identified incongruence as a departure lever linked to college choice via the expectations a student forms of the institution prior to matriculating. These expectations link college choice and persistence as "the phenomenon of incongruence as a source of departure

leads to the practical question of how individuals go about choosing an institution of higher education" (Tinto, 1993, p. 54).

Braxton, Vesper and Hossler (1995) tested Tinto's posited relationship between student expectations, initial commitments and subsequent academic and social integration. Data were obtained from a subsample of 263 students from a Lilly Endowment and Indiana College Placement Center study. The structural equation model tested in the study included entry characteristics (gender, ethnicity, parental SES, parental encouragement), initial goal and institutional commitments, and expectations for academic and intellectual development and expectations for a collegiate atmosphere. Findings demonstrated a relationship between student expectations, initial commitments and academic and social integration. Initial commitment to the institution had a positive direct effect on expectations for academic and intellectual development and expectations for a collegiate atmosphere. Initial commitment to the goal of graduation had direct positive effect on expectations for a collegiate atmosphere. Academic and social integration were related to the extent to which expectations for college were being met. Greater fulfillment of expectations for academic and intellectual development led to greater degrees of academic integration and social integration. Results confirmed the hypothesis that "the more committed students are to both the institution and to the goal of college graduation, the greater the degree of importance they attach to the fulfillment of their expectations for college" (p. 604).

Linking College Choice and Retention

College choice and retention researchers have speculated about the relationship between college choice and retention and called for expanding the research literature to

address potential linkages (Attinasi, 1999; Freeman, 1999b; Freeman & Thomas, 2002; Hossler, Braxton & Coopersmith, 1989; Terenzini & Pascarella, 1983; Stage & Hossler, 2000; Stage & Rushin, 1993; Tinto, 1993; Villella & Hu, 1990). There is a growing body of conceptual and empirical work addressing the potential links between choice and retention. This speculation is due in part to the student background characteristics common in both models of choice and retention such as SES, parental encouragement, parental education and student ability (Stage & Hossler, 2000). The temporal overlap of college choice and persistence stages (Stage & Rushin, 1993) also fuels this speculation.

Student expectations are a fertile ground for exploring more substantive links between choice and retention. Ironically, researchers have long understood that students carry unrealistic expectations of their future collegiate experiences. Stern (1970) labeled this phenomenon the freshman myth. Researchers (Kotler & Fox, 1985; Maguire & Lay, 1982) have demonstrated that student expectations, realistic or not, impact students' college choice decisions. Rowser (1997) demonstrated that African American students at a PWI entered college with unrealistic expectations about their subsequent academic performance. As academic performance is one measure of academic integration, the study suggests that black students at PWIs may be at risk of problems with academic integration.

The role of student expectations of collegiate experiences in college selection (selection phase) was most clearly articulated in Chapman's (1981) model of student college choice. Attinasi (1989) was one of the first investigators to link expectations developed during the choice process to collegiate persistence. Attinasi (1989) conducted interviews with eighteen Mexican American college students. He outlined five categories

of college preparatory or "getting ready" behaviors undertaken by the students: 1) initial expectation engendering, 2) fraternal modeling, 3) mentor modeling, 4) indirect simulation and 5) direct simulation. The first category, initial expectation engendering, entailed students developing a firm predisposition toward college attendance. Once these expectations were formed, the remaining preparatory/"getting ready" behaviors "provided substance, in the form of descriptions, prescriptions and predictions *about* college-going" (p. 257). The preparatory/"getting ready" behaviors resulted in the participants acquiring knowledge about college-going behaviors and attitudes vicariously (categories 2, 3,4) and through direct experience (category 5). Attinasi indicated that the students' anticipatory socialization experiences not only resulted in the positive formation of collegiate predisposition but also contributed to the students' pre-matriculation expectations of their subsequent collegiate experiences. These expectations were positively related to collegiate persistence.

Stage and Rushin (1993) developed a model linking predisposition to college and retention with a subsample of more than 1,100 students from the High School and Beyond survey (80:82:84). Their integration of college choice and retention was based upon the common background characteristics employed in both college choice and retention models and the temporal overlap between the college choice predisposition stage and early phases of the college persistence process. Building upon Attinasi (1989), Stage and Rushin (1993) included measures of family attitudes toward and encouragement of college attendance (parental encouragement and sibling modeling). These measures, common in college choice investigations, were novel in studies of retention. Parental encouragement was related to students' degree aspirations (goal

commitment) and plans to attend college the year following high school. Parental encouragement also influenced students' goal commitment (commitment to graduation).

Drawing upon status attainment theory, behavioral intentions and self-efficacy as well as Stage and Rushin's (1993) earlier work linking college choice and retention, Stage and Hossler (2000) developed a theory of student persistence in which college choice and persistence are linked. In the theory, intentions precede actions which are influenced by attitudes toward the behaviors and subjective norms concerning the behavior. The preparatory/"getting ready" behaviors engaged in by pre-matriculation students lead to increasing belief in the student's self-efficacy – ability to do well in school – and lead to enhanced expectations which support intention to do well at school. Increased belief in self-efficacy and higher expectations for performing well in school leave students more likely to engage in the behaviors necessary to succeed. Key elements and processes in the model include student background, school experiences (middle and secondary), intentions toward college attendance and engagement in college search and preparation activities, college entry and persistence/dropout. The set of background characteristics identified in the model – parental encouragement, student involvement in high school, modeling/"getting ready" behaviors – common to college choice literature, are a unique combination in studies of persistence. Among other facets, the model emphasizes the role of students' expectations. The model is unique among persistence models in that it considers parental encouragement among its student background factors. The model tested had a strong emphasis on post-matriculation experiences of students, but its focus on pre-matriculation factors is important for the present study.

Paulsen and St. John (1997) developed a cost-benefit model linking college choice and persistence. Key to their model was the role of student expectations.

A student's choice to attend a particular college is based on background and personal characteristics and pre-matriculation expectations of expected benefits and costs. Students choose to attend a specific college because of positive pre-matriculation expectations of expected costs and benefits (p. 67).

The study is important not only for its findings, but for its methodological precedent of using student ratings of institutional characteristics as college choice measures, specifically, student expectations of collegiate experiences. "We view students' ratings of financial reasons for college choice (financial aid, low tuition, ability to work and low living costs) as college choice variables that are critical to students' pre-matriculation evaluation of costs and benefits" (p. 69).

Figure 3 presents the conceptual model linking college choice and retention employed by this study.

Figure 3. Conceptual Model of the Choice-Retention Relationship.
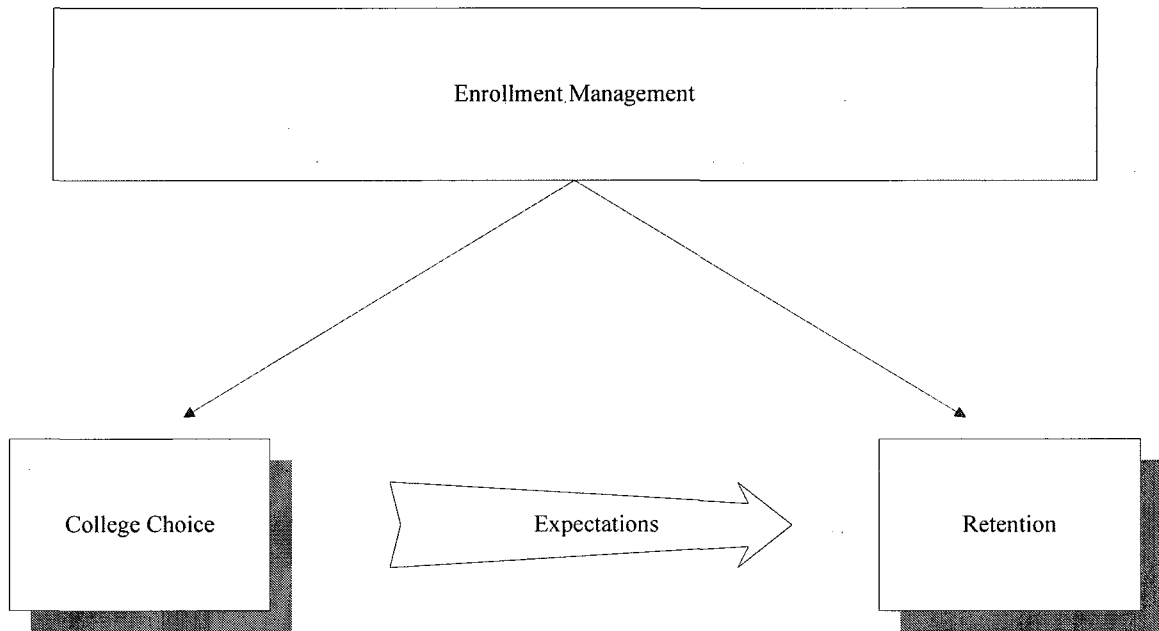
Predicting Retention

The voluminous retention literature and institutional interest in affecting retention rates has led to considerable effort devoted to predicting retention (Glynn, Sauer and Miller, 2003). A growing segment of retention prediction research has focused on correlates of retention for African American students (Galicki & McEwen, 1989; Hogedoern, Lichtman, Bass & Ager, 1989; Mallinckrodt, 1988; Maxwell and Hampton, 2001-02; Hood, 1992). Many of these studies use post-matriculation independent measures to predict retention. There are, however, studies employing pre-matriculation measures.

High school grade point average and standardized test scores have received the most attention in the retention prediction literature. It is generally accepted that high school grades are the best predictor of collegiate achievement (Fleming, 2002; Fleming and Garcia, 1998; Tross, Harper, Osher and Kneidinger, 2000).Standardized test scores

have also been related to academic achievement, though not as strongly as high school grades (Moffat, 1993). Fleming (2002) has demonstrated that the SAT has differential predictive validity for African American students. These findings have been validated in subsequent studies. Kobrin, Patterson, Shaw, Mattern & Barbuti (2008) assessed the predictive validity of the revised SAT on academic performance. The SAT-M, and SAT-CR are significantly correlated to first year GPA. Adding the SAT-W enhances the predictive ability of the test. The SAT over-predicted first year grade point average of African American students more than any other ethnic group.

The research literature has demonstrated that measures of achievement (high school grades) and ability (standardized test scores) vary in predicting collegiate outcomes (retention, achievement) by race and gender. Studying students at a predominantly white, religiously controlled private institution, Hoffman and Lowitzki's (2005) path analysis found high school grades to be a stronger predictor of collegiate grade point average for students of color than white students while standardized test scores were weaker predictors for students of color.

Financial aid has also emerged as a link between college choice and retention (Paulsen & St. John, 1997, 2002; St. John, Paulsen & Carter, 2005). The financial nexus model that emerged from this research explores the relationship between expectations of financial factors at the time of students' selection decisions and financial factors (e.g., tuition, aid) at the time of persistence decisions (Paulsen & St. John, 2005). Cabrera, Nora and Castaneda (1992) demonstrated that financial aid was related to persistence by facilitating students' social and academic integration. Of particular interest to the present

study, the amount and type of financial aid received has been related to retention (Kim, 2004).

Summary

Norfolk State University, like many HBCUs faced internal and external challenges to its enrollment levels. The University was losing market share of African American students to two local competitor institutions. At the same time, the Commonwealth of Virginia introduced legislation compelling the University to increase enrollment of new students and increase retention rates. This study seeks to contribute to the University's enrollment growth and retention objectives by exploring the relationship between college choice and retention. Specifically, the study seeks to determine if college choice measures improve the ability to predict freshman retention outcomes.

The study's rationale is firmly supported by the research literature. Enrollment management theory provides a conceptual link between college choice and retention. In the growing body of work exploring the relationship between college choice and freshman retention student expectations have emerged as a nexus between college choice and retention. Using data from a previously administered survey of college choice to operationalize student expectations, the current study explores the relationship between students' expectations and freshman retention outcomes. The study is novel in its use of pre-matriculation predictor variables.

As retention is best understood as an institution-specific phenomenon, it is important to broaden the scope of student groups and institutional types represented in the research literature. The present study broadens the institutional types (public, urban, four-year HBCU) and student groups (African American) represented in the literature.

CHAPTER III

In response to external mandates and increased competition for its traditional student base, Norfolk State University adopted enrollment growth as a strategic goal with two objectives: enrolling more new students and retaining a higher proportion of enrolled students. College choice theory and retention theory, respectively, informed the University's efforts to address these objectives.

College choice theory addresses two questions: who goes to college and where do they enroll (Greenough, 2003; Paulsen, 1990)? Models of college choice delineate a longitudinal process in which students develop aspirations for postsecondary education (predisposition phase), explore their various postsecondary options (search phase), and finally, select an institution to attend (selection phase) (Hossler & Gallagher, 1987). The University targeted the selection stage in its research efforts. In fall 2006 the University conducted a survey of students accepted to the university as freshmen for the fall 2006 term. The survey sought to learn more about students' perceptions of the University as they were evaluating their enrollment options and making enrollment decisions. This time was ideal because students were evaluating their choice set institutions in advance of their selection decisions and the perceptions and ratings of the university were most salient.

A growing literature base concerns itself with the connections between college choice and retention (Attanasi, 1989; Hossler, Braxton & Coopersmith, 1989; Freeman & Thomas, 2002). Students' expectations of their collegiate experiences have emerged as a

nexus between these two theory bases (Paulsen & St. John, 1997; Stage & Hossler, 2000). Students engaged in the college selection process form expectations about their subsequent collegiate experiences based on their personal characteristics, external influences and characteristics of the institutions under consideration. The expectations formed during this process ultimately lead to the students' choice of an institution (Chapman, 1981). The expectations students form prior to matriculating are also implicated in retention. Students whose collegiate experiences vary from their pre-matriculation expectations are likely to experience incongruence, a departure lever identified by Tinto (1993).

This study, consistent with the growing literature, extends the University's strategic and conceptual linking of college choice and retention. Operationalizing student expectations with data from the University's 2006 administration of the ASQ Plus® survey, this study explores the relationship between college choice and freshman retention outcomes. This study extends retention prediction research by introducing novel predictor variables. Students' pre-matriculation expectations of the University were used as independent measures in the study's retention prediction models. This study also adds to the body of research on HBCUs and African American students. In its focus on a single institution, this study is consistent with Brown's (2003) call for more nuanced appreciation of institutional context and specificity in HBCU research. This focus is also consistent with Astin's (1997) suggestion that retention is best understood as an institutional phenomenon.

Purpose

This study sought to improve the ability to predict freshman retention outcomes at Norfolk State University. This study adopts Tinto's (1987, 1993) conceptualization of retention as a longitudinal process that begins before students arrive on campus. In addition to measures of ability (i.e., SAT scores, high school GPA) commonly used to predict freshman retention outcomes, this study included students' pre-matriculation expectations of the University (i.e., ASQ Plus® survey responses) and financial aid (type and amount received) as independent measures. This study's expanded set of predictor variables is consistent with the emerging literature linking college choice and retention. The research questions are:

    1) What is the relationship between pre-matriculation perceptions of the institution and freshman retention?

    2) What is the relationship between college search measures and freshman retention?

    3) What is the relationship between the type and amount of financial aid received and freshman retention?

    4) What is the relationship between students' ranked enrollment preferences for the University and freshman retention?

This study operationalized students' pre-matriculation expectations of their collegiate experiences with the ASQ Plus® survey. Survey items were regressed on to freshman retention outcomes to determine the relationship between pre-matriculation expectations and freshman retention. These data were linked to background, demographic and

financial aid data from the University's student information system to form the study's

data set.

Population and Sample

During the summer of 2006 Norfolk State University conducted a survey of all

students admitted as first-time freshmen for the fall 2006 term as of June 1, 2006 (n =

2,614). A total of 412 students (16%) responded (348 enrolling students, 64 non-enrolling

students). This study analyzed a subset of 318 enrolling respondents who identified

themselves as black or African-American. The study participants represented 30% of new

freshmen enrollments for fall 2006 (n = 1,057) and 33.2% of new African-American

freshmen (n = 959). Three hundred and ten (310) participants were members of the

freshman cohort. The other eight participants were first-time, part-time degree seeking

freshmen. The eight non-cohort members were included in this study's analyses to

increase the study's sample size and ensure that analyses met the recommended 10:1

observation-to-predictor ratio (Peng, Lee & Ingersoll, 2002). Students were mailed paper

copies of the Admitted Students Questionnaire Plus® survey along with a cover letter

and a postage paid return envelope. Students were given the option of completing a paper

survey or an on-line version. All students who neither completed the on-line survey nor

returned a paper instrument within two weeks were sent a second request for

participation.

Institutional Context

Norfolk State University is a mid-sized, public, urban, four-year historically black

college located in southeast Virginia. Key enrollment and demographic trends for the

University are presented in table 1.

Table 1. Norfolk State University Profile

	2002	2003	2004	2005	2006
General Characteristics					
Total Enrollment	6,839	6,846	6,165	6,096	6,238
Undergraduate Enrollment (%)	87.3	88.2	87.5	87.5	86.6
Students in On-Campus Housing (%)	28.3	27.6	29.5	33.7	35.6
African-American Enrollment (%)	88.0	87.3	86.3	85.6	85.6
Female Enrollment (%)	64.3	64.9	64.2	63.1	64.2
In-state Enrollment (%)	71.6	73.4	73.3	74.4	77.0
Undergraduates Receiving Financial Aid (%)	80.9	82.5	84.2	87.1	92.3
Freshman Retention (%)	71	70	63	65	68
Six-year Graduation Rate (%)	22	27	28	27	29

Admissions profile trends for the fall 2002 through fall 2006 freshman classes are presented in table 2.

Table 2. Norfolk State University Undergraduate Admissions Trends

	2002	2003	2004	2005	2006
Applications	4,700	4,651	4,243	4,707	4,569
Admitted (%)	77.5	70.9	73.4	70.4	69.8
Enrolled (%)	32.3	35.0	32.5	30.2	33.1
Mean SAT Enrolled Students	873	898	890	897	883
Mean HS GPA Enrolled Students	2.61	2.61	2.65	2.68	2.73

Norfolk State University enrolled a total 1,057 new freshmen for the fall 2006 semester; 959 of these students were African American. The following section compares new African American freshmen ASQ participants ($n = 318$) with new African American freshmen non-ASQ participants ($n = 641$). There were no differences in the proportion of new African American freshmen ASQ participants and non-ASQ participants receiving financial aid or retained the subsequent fall. There were differences in the proportion of in-state students, women and students in on-campus housing among ASQ participants

and non-ASQ participants. New African American freshmen ASQ participants were 1.67 times more likely to be out-of-state students [χ^2 (1,959) = 19.657, $p < .001$], 1.25 times more likely to be women [$\chi2$ (1, 959) = 20.23, $p < .001$] and 1.08 times more likely to live on-campus [χ^2 (1,959) = 4,978, $p. = .026$] than new African American freshmen non-ASQ participants. New freshmen are comprised of associate's degree-seeking and bachelor's degree-seeking students. African American freshmen ASQ participants were 1.93 times more likely to be Associate's degree-seeking students than new African American non-ASQ participants [χ^2 (1,959) = 12.326, $p. < .001$]. Differences in mean total SAT scores for ASQ participants and non-ASQ participants were not statistically significant. ASQ participants had higher mean high school GPAs than non-ASQ participants $F(1,948) = 10.747, p. = .001$. Table 3 compares ASQ participants with non-ASQ participants.

Table 3. Comparisons of African American ASQ Participants and Non-participants

	ASQ Participants (%)	Non-participants (%)
Female	72.6	57.7
Male	27.4	42.3
On-campus Housing	80.2	73.6
Off-campus Housing	19.8	26.4
In-state Student	67.9	80.8
Out-of-state Student	32.1	19.2
Associate's Degree Student	15.1	7.8
Bachelor's Degree Student	84.9	92.2
Retained Fall 2007	70.4	70.0
Not-retained Fall 2007	29.6	30.0
Mean Total SAT (SATM + SATV)	875	880
Mean HS GPA	2.79	2.69

<u>Instrument</u>

Participants were administered the College Board's Admitted Students Questionnaire Plus® (ASQ Plus). The ASQ Plus® addresses influences on students' selection of an institution to attend. The first section (questions 1 – 16) of the survey presents respondents with sixteen institutional characteristics and asks them to rate the importance of each characteristic in their selection of an institution to attend. Using a Likert scale, respondents rate each characteristic on a scale ranging from not important (1) to very important (3). The survey's second section (17 – 20) inquires about the respondents' choice sets. Section three asks respondents to rate the institution along the institutional characteristics first presented in section one using a five point Likert scale (can't rate – 0, poor/fair – 1, excellent – 4). Section four asks respondents to indicate the images they associate with the university by selecting items from a list of twenty descriptive words and phrases. Section five solicits participants ratings of the quality of information sources about the university (poor/fair –1, excellent – 4, not used – 0). Section six gathers financial aid data. Section seven includes custom questions developed by Norfolk State University (see table 4).

Table 4. ASQ Plus Local Questions

1) Was Norfolk State University you:
    1) First-choice
    2) Second-choice
    3) Third-choice

2) How important was the availability of financial aid based on need in choosing the college you will attend?
    1) Not important
    2) Somewhat important
    3) Not important

Table 4. ASQ Plus Local Questions

3) When did you first start choosing which schools to apply to?
    1) Prior to your junior year
    2) Fall of your junior year
    3) Spring of your junior year
    4) Summer before your senior year
    5) Fall of your senior year
    6) After December of your senior year

4) How knowledgeable was your guidance counselor of Norfolk State University?
    1) Not familiar
    2) Somewhat familiar
    3) Very familiar

Predictor Variables

In addition to the ASQ survey items, this study used demographic measures

(gender, domicile and first semester housing status), measures of ability (high school gpa,

SAT/ACT scores) and financial aid measures. Hoffman and Lowitzki (2005) suggest that

retention models investigating financial aid predictor variables consider the amount and

packaging of the aid and that need-based and merit-based aid be considered separately.

Kim (2004) demonstrated the importance of measuring the amount and type of aid when

measuring the relationship between financial aid and choice. This study uses both the

type and amount of financial aid as predictors.

Research Questions

The research questions addressed in the current study are listed below. The logistic

regression models addressing the study's research question follow in parentheses.

1.1 Are participants' ratings of NSU on the sixteen institutional characteristics related to

freshman retention? (logistic regression model 1.1)

Research Hypothesis 1.1: After controlling for gender, domicile, housing status, high school GPA and composite SAT scores, participants' ratings of NSU will improve the ability to predict the likelihood of freshman retention outcomes.

Null Hypothesis 1.1: Participants' ratings of NSU will not improve the ability to predict the likelihood of freshman retention outcomes after controlling for gender, domicile, housing status, high school GPA and composite SAT scores.

1.2 Are the images participants associate with the University related to freshman retention? (logistic regression model 1.2)

Research Hypothesis 1.2: After controlling for gender, domicile, housing status, high school GPA and composite SAT scores, the images participants associate with NSU will improve the ability to predict the likelihood of freshman retention outcomes.

Null Hypothesis 1.2: The images participants hold of the University will not improve the ability to predict the likelihood of freshman retention outcomes after controlling for gender, domicile, housing status, high school GPA and composite SAT scores.

2. Are college search measures (begin considering application schools, first choice, # applied, # accepted, guidance counselors knowledge of NSU) related to freshman persistence? (logistic regression model 2)

Research Hypothesis 2: After controlling for gender, domicile, housing status, high school GPA and composite SAT scores, college search measures will improve the ability to predict the likelihood of freshman retention outcomes.

Null Hypothesis 2: College search measures will not improve the ability to predict the likelihood of freshman retention outcomes after controlling for gender, domicile, housing status, high school GPA and composite SAT scores.

3. Are the types and amounts of financial aid received related to freshman persistence? (logistic regression model 3)

Research Hypothesis 3: After controlling for gender, domicile, housing status, high school GPA and composite SAT scores, the amount and type of financial aid awards will improve the ability to predict the likelihood of freshman retention outcomes.

Null Hypothesis 3: The type and amount of financial aid received will not improve the ability to predict the likelihood of freshman retention outcomes after controlling for gender, domicile, housing status, high school GPA and composite SAT scores.

4. Are there differences in retention rates among students for whom NSU was the first-choice institution and those for whom it was not the first-choice institution? (Chi-square analyses).

Research Hypothesis 4: Participants for whom NSU was the first-choice institution will be retained at higher rates than participants for whom NSU was not the first choice institution.

Null Hypothesis 4: There will be no differences in the proportion of students retained among students for whom NSU was the first-choice institution and those for whom NSU was not the first choice institution.

Analyses

Descriptive analyses of all predictor variables considered in the logistic regression models and chi-square analyses were conducted for the study participants. Research questions one through three were addressed by logistic regression analyses. Though some researchers have employed ordinary least squares regressions in studies predicting retention outcomes (Dey & Astin, 1993), logistic regression is accepted as the appropriate

analysis tool for predicting dichotomous dependent measures with independent measures of multiple measurement scales (e.g., categorical, continuous) (Cabrera, 1994; Hosmer & Lemeshow, 2000).

Logistic regression analyses were conducted using two variable blocks. Predictor variables were assigned to one of two variable groupings, or variable blocks. In each of the four logistic regression models, the first block of predictor variables included freshman profile measures (total SAT scores, high school GPA) and demographic measures (gender, domicile, housing status). The second variable block considered in each regression model consisted of college choice measures. Logistic regression permits an analysis of the independent effects of each predictor variable on the dependent measure (Garson, 2009, Thompson, year). Utilizing variable blocks permits the assessment of the independent and combined effects of the variable blocks on the dependent measure. This study sought to determine if college choice measures improved the ability of freshman profile and demographic measures to predict retention outcomes.

Block 1 in each logistic regression model utilized an enter method that forced all of the predictor variables into the prediction model. Block 2 in each regression model used a forward conditional stepwise method. Using this method ensured that only those variables that contributed to the model's predictive ability were retained (Garson, 2009). The use of the forward conditional entry method in block 2 of the regression models is consistent with the exploratory nature of this study.

Research question four was addressed with a Chi-Square test of proportions. Students were assigned to a preference rank group – students for whom the University was the first choice institution and students for whom the University was not the first

choice institution. The proportions of retained and non-retained students for each group were compared.

Norfolk State University accepts both SAT and ACT scores from prospective students. Composite ACT scores were converted to re-centered total SAT scores for those participants submitting ACT scores. The regression analyses excluded cases from the models list-wise. That is, cases with missing values for any predictor variable under consideration were not included in the analyses. Appendix B lists the regression model blocks for each research question.

Summary

Norfolk State University adapted an Enrollment Management administrative structure as part of its efforts to address its enrollment growth and retention objectives. College choice theory and retention theory served as the intellectual grounding for efforts to address these objectives. The University also adapted an enrollment management conceptual framework to integrate college choice and retention theory. This frame conceives the choice and retention processes as different ends of a student-institution life-cycle continuum. Student expectations have emerged as a nexus between college choice and retention. The current study maintains this perspective and contributes to an emerging literature base exploring links between college choice and retention by utilizing pre-matriculation measures of student expectations to predict freshman retention outcomes. Expectations were operationalized with data from the University's 2006 ASQ Plus® survey administration. This study is also distinguished in its emphasis on African American students enrolled at a public, urban HBCU.

CHAPTER IV

Introduction

      This study seeks to contribute to the University's enrollment growth and retention

objectives by exploring the relationship between college choice and retention. College

choice and retention have received increased interest as related processes, with student

expectations of their collegiate experiences serving as a nexus. The current study

explores the utility of pre-matriculation expectations as a predictor of freshman retention

outcomes.

      In 2006 Norfolk State University administered the ASQ Plus® survey to students

admitted to the fall 2006 freshman class. The survey was intended to help the University

learn more about how prospective students perceived the university. The survey was part

of the university's efforts to reach its new student enrollment growth objectives. The

current study employed data from the University's ASQ Plus® administration in an effort

to address the University's improved retention rate objectives. This study explored the

relationship between college choice and retention utilizing students' pre-matriculation

expectations of the University, operationalized with ASQ Plus® survey items, to predict

the likelihood of freshman retention outcomes. Four research questions were addressed:

      1) What is the relationship between pre-matriculation perceptions of the

      institution and freshman retention?

      2) What is the relationship between college search measures and freshman

      retention?

3) What is the relationship between the type and amount of financial aid received and freshman retention?

4) What is the relationship between students' ranked enrollment preferences for the University and freshman retention?

Logistic regression equations were constructed to test research questions one through three. Pearson's Chi-Square analyses were employed to test research question four. Analysis of the regression models will include descriptive analyses of the predictor variables, overall regression model evaluations, tests of individual predictors, goodness-of-fit measures and validations of predicted probabilities. This analysis strategy is consistent with recommended reporting guidelines for logistic regression analyses (Peng, Lee & Ingersoll, 2002). Table 5 provides frequencies and mean item scores for participant demographic measures and ratings of institutional characteristics. The vast majority of survey participants were retained. Participants were overwhelmingly female, Virginia residents and resided in on-campus housing fall semester 2006.

Table 5. Participant Demographics

	Frequency (%)	Mean	Standard Deviation
Dependent Measure			
Retained (1)	70.4		
Not Retained (0)	29.6		
Participant Demographics			
Male (1)	27.4		
Female (0)	72.6		
In-state	67.9		
Out-of-State	32.1		
On-campus Housing (1)	80.2		
Off-campus Housing (0)	19.8		
High School GPA		2.8	.433
Total SAT (SATM+ SATV)		875.3	90.9

Participants rated the University on sixteen institutional characteristics[4].

Participants generally rated the University in the very good range; only two items had

mean ratings below 3 (very good). The items receiving the highest nominal mean ratings

were extracurricular opportunities, quality of social life, majors of interest, recreational

facilities, off-campus activities and personal attention. The items with the lowest nominal

mean ratings were campus surroundings and academic reputation (see table 6).

Table 6. NSU Characteristic Ratings

	Mean	Standard Deviation
Extracurricular Opportunities	3.53	.658
Quality of Social Life	3.43	.689
Majors of Interest	3.36	.728
Recreational Facilities	3.35	.714
Off-campus Activities	3.31	.736
Personal Attention	3.30	.756
Quality of Computer Facilities	3.29	.733
Academic Facilities	3.28	.718
Campus Attractiveness	3.26	.794
Special Academic Programs	3.25	.715
Availability of On-campus Housing	3.23	.790
Availability of Merit Scholarships	3.05	.918
Cost to Family	3.04	.957
Quality of On-campus Housing	3.03	.847
Academic Reputation	2.88	.815
Campus Surroundings	2.70	.990

Participants identified the images they associated with the University. Response

frequencies for the images are listed in Table 7. The five images most frequently

associated with the University were fun, friendly, comfortable, career-oriented and

supportive.

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[4] Items were rated on a four item Likert-type scale: 1 – poor/fair, 2 – good, 3 – very good,
4 – excellent.

Table 7. Images Held by Participants

	Frequency (%)	
	Selected	Not-selected
Fun	66.4	33.6
Friendly	58.5	41.5
Comfortable	52.8	47.2
Career-oriented	48.4	51.5
Supportive	43.4	56.6
Partying	39.9	60.1
Manageable Academics	38.1	61.9
Athletics	36.2	63.8
Intellectual	34.0	66.0
Inexpensive	32.4	67.6
Diverse	28.6	71.4
Challenging	26.4	73.6
Average	22.3	77.7
Prestigious	16.7	83.3
Expensive	13.2	86.8
Back-up School	11.3	88.7
Selective	5.7	94.3
Not Well-known	3.8	69.2
Isolated	1.3	98.7

Measures of college choice pertaining to the participants' choice sets were also analyzed. Table 8 lists descriptive measures of these predictor variables. Norfolk State University was the first-choice institution for one-third of the participants. More than forty percent of participants began selecting schools during their senior year. Thirty-seven percent began before or during their junior year.

Table 8. College Choice Measures

	%	Mean	Standard Deviation
NSU First Choice			
Yes	33.3		
No	66.7		
# Colleges Applied to		4.16	3.16
# Colleges Accepted to		3.17	2.38
Began Choosing Schools:			
Prior to Junior Year	8.0		
Fall Junior Year	14.7		
Spring Junior Year	14.3		
Summer Before Senior Year	19.2		
Fall Senior Year	30.8		
After December Senior Year	12.9		

Model three considered type and amount of financial aid as independent measures. Table 9 lists mean financial aid awards by award type for the participants. The most frequently received types of financial aid were subsidized direct loans, need-based grants, state grants and unsubsidized direct loans. The largest mean awards were for need-based grants, state grants, PLUS loans and subsidized direct loans.

Table 9. Financial Aid Type and Amount

	N	Mean	Standard Deviation
Need-based Grants	157	$ 1,973.05	$ 2,274.34
State Grants	149	$ 1,848.36	$ 2,531.21
PLUS Loans	55	$ 1,885.19	$ 4,724.79
Subsidized Loans	199	$ 1,750.81	$ 1,566.56
Unsubsidized Loans	125	$ 1,276.00	$ 1,783.06
Institutional Aid	84	$ 991.12	$ 2,649.66
Private Scholarships	92	$ 607.28	$ 1,481.91
Private Loans	17	$ 456.51	$ 2,248.03
Work Study	33	$ 162.27	$ 509.62

<u>Research Question 1.1</u>

A logistic regression model was constructed to predict the likelihood of a study

participant being retained. Predictor variables were entered in two analysis blocks. Block

1 consisted of the categorical measures gender, domicile and housing status and two

continuous predictor variables – high school GPA and total SAT scores. All measures in

the first block were forced into the regression model using the enter method, which

forced all of the predictors into the regression model.

Block 2 predictor variables were participants' ratings of NSU along sixteen

institutional characteristics. Block 2 items were considered for inclusion in the model

using a forward conditional step-wise strategy.

A logistic regression model with an intercept only (no predictor variables)

correctly predicted the likelihood of retention outcomes for 76.2% of the 122[5] students

included in the research question 1.1 analyses. Table 10 lists the model 1.1 block 0

classification matrix and measures of effect size.

Table 10. Model 1.1 Block 0

Classification Matrix			
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	0	29	0
Retained	0	93	100
Overall %			76.2

Model Effect Size				
Overall	Sensitivity	Specificity	False Positive	False Negative
76.2	100	0	23.8	0

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[5] A case-wise exclusion strategy was employed for the regression models constructed for
this study. Cases with missing values for <u>any</u> predictor variable under consideration were
excluded from the regression model.

A test of the block 1 model versus a model with intercept only (block 0) was not statistically significant X^2 (5, $N = 122$) = 4.92, $p = .425$ indicating that the five predictor variables in block 1 did not improve upon the null model's ability to predict the likelihood of freshman retention outcomes. Hosmer and Lemeshow test results suggest the model fit the data well, X^2 (8, $N = 122$) = 7.195, $p. = .516$. The block 1 model, like the null model, correctly predicted retention outcomes for 76.2% of the 122 participants included in the research question1.1 analyses. [6]

A test of the block 2 model versus the block 1 model was statistically significant X^2 (9, $N = 122$) = 24.101, $p = .004$, lending support to the hypothesis that participants' ratings of NSU improve the ability to predict the likelihood of retention outcomes. Hosmer and Lemeshow test results suggest the model fit the data well, X^2 (8, $N = 122$) = 8.24, $p. = .410$. Four items from block 2 were added to the regression model (quality of on-campus housing, off-campus activities, availability of merit scholarships and availability of housing on campus). Using a .05 criterion of statistical significance, four predictors – ratings of quality of on-campus housing, availability of on-campus housing, availability of merit scholarships and off-campus activities -- had significant partial effects. The odds ratio for quality of on-campus housing indicates that for every one point increase in participants' ratings of the quality of on-campus housing the odds of being retained versus not being retained increased by a factor of 6.49. For every one point increase in rating of the availability of campus housing the odds of being retained versus not being retained increased by a factor of 5.164. For every one point increase in participants' ratings off campus activities the odds of being retained versus not being

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[6] The model 1.1 block 1 classification matrix and measures of effect size were identical to model 1.1 block 0.

retained increased by a factor of 3.9. For every one point increase in participants' ratings of the availability of merit scholarships the odds of being retained versus not-being retained increased by a factor of 2.285.

Even though the block 2 model added four predictor variables to the null model, the block 2 model did not improve upon the null model's 76.2% overall classification rate. Table 11 lists the model 1.1 block 2 classification matrix, model description and measures of effect size.

Table 11. Model 1.1 Block 2

Classification Matrix			
	Predicted		
	Not Retained	Retained	% Correct
Observed			
Not Retained	5	24	17.2
Retained	5	88	94.6
Overall %			76.2

Model Description			
Predictor	B	Wald X^2	p	Odds Ratio
---	---	---	---	---
Domicile (1)	-.337	.336	.562	.714
Gender (1)	-.571	1.172	.279	.565
Housing (1)	-1.226	2.281	.131	.294
High School GPA	-.185	.126	.723	.831
Total SAT	.000089	.001	.973	1.005
Quality of On-Campus Housing	-1.868	9.819	.002	.154
Off-Campus Activities	-1.367	6.912	.009	.255
Availability of Merit Scholarships	.826	4.47	.034	2.285
Availability of On-Campus Housing	1.642	8.421	.004	5.164

Model Effect Size				
Overall	Sensitivity	Specificity	False Positive	False Negative
76.2	94.6	17.2	21.4	50

Though the block 2 model's overall classification rate was the same as the null model, the block 2 model's performance on four measures validating the model's predicted probabilities point to strengths of the block 2 model. Sensitivity measures the

proportion of correctly classified events. For this study, sensitivity is the proportion of students correctly predicted to be retained. The block 2 model's sensitivity rating was 5.4 percentage points lower than the null and block 1 models. This decrease in performance was offset by improved specificity ratings. Specificity refers to the proportion of correctly classified non-events. For this study, specificity refers to the proportion of students correctly predicted to not be retained. Specificity for the block 2 model was 17.2% compared to 0% for the null and block 1 models. False positives, the proportion of students incorrectly predicted to be retained, decreased from 23.8% in the null model to 21.4% in the block 2 model. False negatives, the proportion of students incorrectly predicted to not be retained, increased from 0% for the null and block 1 models to 50% for the block 2 model. Considered together, the block 2 model's predictions are preferred over the null and block 1 models. The overall classification rate was the same for all three models. The block 2 model's sensitivity rate was slightly lower than the preceding models, but this drop is offset by the block 2 model's superior ability to correctly predict those students who will not be retained and lower false positive rate.

Research Question 1.2

A logistic regression model was constructed to predict the likelihood of a study participant being retained. Predictor variables were entered in two analysis blocks. Block 1 consisted of the categorical measures gender, domicile and housing status and two continuous predictor variables – high school GPA and total SAT scores. All measures in the first block were forced into the regression model using the enter method.

Block 2 predictors were the nineteen image items from the ASQ survey. Block 2 items were considered for inclusion in the model using a forward conditional step-wise strategy.

A logistic regression model with an intercept only predicted retention outcomes correctly for 70.4 percent of the 318 students included in the model. Table 12 lists the model 1.2 block 0 classification matrix and effect size measures.

Table 12. Model 1.2 Block 0

Model Classification			
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	0	94	0
Retained	0	224	100
Overall %			70.4

Model Effect Size				
Overall	Sensitivity	Specificity	False Positive	False Negative
70.4	100	0	29.6	0

A test of the block 1 model versus a model with intercept only was not statistically significant X^2 (5, N = 318) = 6.2, p = .287, indicating that the five predictor variables in block 1 did not improve the null model's ability to predict the likelihood of freshman retention outcomes. Hosmer and Lemeshow test results suggest the model fit the data well, X^2 (8, N = 318) = 9.234, $p.$ = .323. Despite the lack of statistical significance, the block 1 model's ability to correctly predict the likelihood of retention outcomes was slightly higher (71.1%) than the null (intercept only) model. Table 13 lists the model 1.2 block 1 classification matrix and measures of effect size.

Table 13. Model 1.2 Block 1

Model Classification			
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	2	92	2.1
Retained	0	224	100
Overall %			71.1

Model Effect Size				
Overall	Sensitivity	Specificity	False Positive	False Negative
71.7	100	2.1	29.1	0

A test of the block 2 model versus the block 1 model failed to reach statistical significance X^2 (6, N = 318) = 12.179, p = .058, failing to support the research hypothesis that the images participants associated with NSU improve the ability to predict the likelihood of freshman retention outcomes. Hosmer and Lemeshow test results suggest the model fit the data well, X^2 (8, N = 318) = 7.862, $p.$ = .447. Despite failing to reach a level of statistical significance, the block 2 model's ability to correctly predict the likelihood of retention outcomes was slightly improved (71.7%) over the block 1 and null models. Table 14 lists the model 1.2 block 2 classification matrix, model description and measures of effect size.

Table 14. Model 1.2 Block 2

Model Classification			
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	4	90	4.3
Retained	0	224	100
Overall %			71.7

Model Description				
Predictor	B	Wald X^2	p	Odds Ratio
Domicile (1)	.445	2.499	.114	1.561
Gender (1)	.007	.001	.980	1.007
Housing (1)	.288	.734	.392	1.333
High School GPA	.417	2.073	.150	1.518
Total SAT	-.002	3.142	.076	.998
Back-up School (1)	1.129	4.893	.027	3.091

Model Effect Size				
Overall	Sensitivity	Specificity	False Positive	False Negative
71.7	100	4.3	28.7	0

The only image item included in the block 2 model was the "back-up school" image. Partial effects for the "back up school" image indicate that the odds of being retained versus not retained increased by a factor of 3.09 for participants who selected the back-up school image.

The block 2 model's predictive ability is preferred to the null and block 1 models. Overall sensitivity of the block 2 model was higher than the null model and equaled the block 1 model's sensitivity. Sensitivity was the same (100%) for all three models. Specifity scores indicated the block 2 model was slightly better at predicting non-retained students (4.3%) than the null (0%) and block 1 (2.1%) models. The block 2 model's false positive rate was lower than the null and block 1 model rates. The false negative rate was the same across all three models (0%).

<u>Research Question 2</u>

A logistic regression model was constructed to predict the likelihood of a study participant being retained. Predictor variables were entered in two analysis blocks. Block 1 consisted of the categorical measures gender, domicile and housing status and two continuous predictor variables – high school GPA and total SAT scores. All measures in the first block were forced into the regression model using the enter method.

Block 2 predictors were five measures related to college choice: Was NSU the participant's first choice institution (categorical), number of schools applied to (continuous), number of schools accepted to (continuous), when did the participant begin the search process (continuous) and high school guidance counselors' knowledge of NSU. Block 2 items were considered for inclusion in the model using a forward conditional step-wise strategy.

A logistic regression model with an intercept only predicted the likelihood of retention outcomes correctly for 69.5% of the 223 participants included in the model. Table 15 lists the model 2 block 0 classification matrix and measures of effect size.

Table 15. Model 2 Block 0

	Model Classification		
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	0	68	0
Retained	0	156	100
Overall %			69.6

		Model Effect Size		
Overall	Sensitivity	Specificity	False Positive	False Negative
69.6	100	0	29.6	0

A test of the block 1 model versus the intercept only model was not statistically

significant X^2 (5, N = 224) = 11.04, p = .051, indicating that the five predictor variables

did not improve upon the null model's ability to predict freshman retention outcomes.

Hosmer and Lemeshow test results suggest the model fit the data well, X^2 (8, N = 224) =

7.974, p. = .436. Despite failing to reach statistical significance, the block 1 model's

ability to correctly predict the likelihood of retention outcomes (73.7%) was higher than

the null model. Table 16 lists the model 2 block 1 classification matrix, model description

and measures of effect size.

Table 16. Model 2 Block 1

Model Classification			
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	10	58	14.7
Retained	1	155	99.4
Overall %			73.7

Model Description				
Predictor	B	Wald X^2	p	Odds Ratio
Domicile (1)	.844	6.325	.012	2.327
Gender (1)	.330	.893	.345	1.391
Housing (1)	.379	.914	.339	1.460
High School GPA	.447	1.805	.179	1.564
Total SAT	-.003	3.273	.070	.997

Model Effect Size				
Overall	Sensitivity	Specificity	False Positive	False Negative
73.5	99.4	14.7	27.4	9.1

Domicile was the only predictor variable with a significant partial effect. The odds of an

in-state student being retained versus not retained were higher, by a factor of 2.237, than

the odds of an out-of-state student being retained.

None of the block 2 predictor variables were entered into the regression model. A block 2 model was not constructed. Measures of validation for the predicted probabilities favor the block 1 model to the null model. The overall classification rate was four percentage points higher for the block 1 model, with a modest decrease in sensitivity, higher specificity ratings and smaller false positive rates than the null model. Results failed to support research hypothesis 2, college choice measures improve the ability to predict the likelihood of freshman retention outcomes.

Research Question 3

Model 3 assessed the relationship between the amount and type of financial aid received by recipients and freshman retention outcomes. A logistic regression model was constructed to predict the likelihood of a study participant being retained. Predictor variables were entered in two analysis blocks. Block 1 consisted of the categorical measures gender, domicile and housing status and two continuous predictor variables – high school GPA and total SAT scores. All measures in the first block were forced into the regression model using the enter method. The second block included the amount of financial aid received in the following categories need-based grants, private loans, private scholarships, subsidized loans, work study, institutional aid, plus loans, state grants and unsubsidized loans. Block 2 items were considered for inclusion in the model using a forward conditional step-wise strategy.

A null model (intercept only) correctly predicted the likelihood of retention outcomes for 70.4% of the 318 participants included in the model. Table 17 presents the model 3 block 0 classification matrix and effect size measures.

Table 17. Model 3 Block 0

Model Classification			
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	0	94	0
Retained	0	224	100
Overall %			70.4

Model Effect Size

Overall	Sensitivity	Specificity	False Positive	False Negative
70.4	100	0	29.6	0

A test of the block 1 model versus the null model was not statistically significant X^2 (5, N = 318) = 6.2, p = .287, indicating that the five predictor variables did not improve upon the null model's ability to predict the likelihood of freshman retention outcomes. Hosmer and Lemeshow test results suggest the model fit the data well, X^2 (8, N = 318) = 9.234, p. = .323. Model one did demonstrate a slight increase over the null model's ability to predict retention outcomes, correctly predicting the likelihood of retention outcomes for 71.1% of participants. Table 18 presents the model 3 block 1 classification matrix and effect size measures

Table 18. Model 3 Block 1

Model Classification			
		Predicted	
	Not Retained	Retained	% Correct
Observed			
Not Retained	2	92	2.1
Retained	0	224	100
Overall %			71.1

Model Effect Size

Overall	Sensitivity	Specificity	False Positive	False Negative
71.1	100	2.1	29.1	0

A test of the block 2 model versus the block 1 model was statistically significant X^2 (9, $N = 318$) = 26.813, $p = .002$, suggesting the block 2 measures improved the ability to correctly predict the likelihood of retention outcomes. Hosmer and Lemeshow test results suggest the model fit the data well, X^2 (8, $N = 318$) = 9.100, $p. = .334$. The block 2 model correctly predicted the likelihood of retention outcomes for 72.3% of participants. Table 19 presents the model 3 block 2 classification matrix, model description and measures of effect size.

Using a .05 criterion of statistical significance five predictors had significant partial effects – domicile, institutional aid, plus loans, state grants, unsubsidized loans. In-state students were 1.888 times more likely to be retained than out-of-state students. For every one dollar increase in institutional aid, plus loans, state grants and unsubsidized loans the odds of being retained versus not retained increased by factors of 1.00028, 1.00016, 1.00024, and 1.00032, respectively.

Table 19. Model 3 Block 2

Model Classification

Observed	Predicted Not Retained	Predicted Retained	% Correct
Not Retained	17	77	18.1
Retained	11	213	95.1
Overall %			72.3

Model Description

Predictor	B	Wald X^2	p	Odds Ratio
Domicile (1)	.636	4.436	.037	1.888
Gender (1)	-.068	.054	.817	.934
Housing (1)	-.030	.008	.930	.971
High School GPA	.191	.384	.536	1.211
Total SAT	-.003	3.279	.070	.997
Institutional Aid	.00015	5.138	.023	1.00028
PLUS Loans	.000091	7.743	.005	1.00016
State Grants	.000133	5.403	.020	1.00024
Unsubsidized Loans	.000166	4.502	.034	1.00032

Model Effect Size

Overall	Sensitivity	Specificity	False Positive	False Negative
72.3	95.1	18.1	26.6	39.3

The block 2 model's overall classification rate was higher than the null and block 1 model classification rates. Sensitivity ratings for the block 2 model were slightly lower than the null and block 1 models. However, the block 2 model had a higher specificity rating and lower false positive rates than the null and block 1 model.

Research Question 4

A Pearson's Chi-square analysis was conducted to determine if there were differences in the proportion of participants retained among students for whom Norfolk State University was the first-choice institution and those for whom it was not. There were no differences in the proportions of students retained among the two groups, X^2 (1, $N = 318) = 0.189, p. = .664$ (see table 20).

Table 20. Retention Status by Rank Preference Category

	Retention Status		
	Not Retained	Retained	Total
Rank Preference			
NSU not first-choice	61	151	212
	28.8%	71.2%	
NSU first choice	33	73	106
	31.1%	68.9%	

There were, however, important distinctions in the ratings of NSU and held images of students for whom NSU was the first-choice institution and those for whom it was not. There were statistically significant differences in ratings of the University for five institutional characteristics (see table 21). Students for whom Norfolk State University was the first choice institution had higher mean ratings[7] of three academic characteristics (i.e., academic reputation, availability of majors of interest and academic facilities) than non-first choice students.

Table 21. NSU Ratings by Rank Preference Status

Characteristic	Mean Ratings				
	1st Choice	Not 1st Choice	F^8	Sig.	η^2
Academic Reputation	3.06	2.77	6.823	.01	.028
Majors of Interest	3.48	3.29	4.053	.045	.016
Academic Facilities	3.44	3.18	6.936	.009	.031
Quality of On-campus Housing	3.27	2.89	10.017	.002	.046
Availability of On-Campus Housing	3.38	3.15	4.582	.033	.020

Statistically significant differences in the proportions of images held between first-choice and non-first choice students emerged for thirteen images (see table 22).

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[7] Despite reaching statistical significance, the effect size for all five characteristics were small.

[8] Degrees of freedom associated with the five characteristics were (1,233), (1,253), (1,215), (1,209) and (1,220), respectively

Table 22. Held Images of First-Choice and Non-First Choice Participants

Image	χ^2	Sig.	% 1st Choice	% non-1st Choice
Prestigious	7.075	.008	24.5	12.7
Fun	19.783	<.001	83.0	53.0
Intellectual	9.086	.003	45.3	28.3
Career-Oriented	17.684	<.001	65.1	40.4
Comfortable	9.597	.002	65.1	46.7
Back-up School	6.907	.009	4.7	14.6
Selective	9.54	.002	11.3	2.8
Athletics	4.604	.032	44.3	32.1
Friendly	11.424	.001	71.7	51.9
Challenging	12.304	<.001	38.7	20.3
Expensive	6.049	.014	19.8	9.9
Supportive	6.971	.008	53.8	38.2
Diverse	9.429	.002	39.6	23.1

First choice students differed from non-first choice students in their perceptions of NSU along academic indicators and measures of campus atmosphere. Compared to non-first choice students, first-choice students were 4.03 times more likely to view NSU as selective, 1.9 times more likely to view NSU as prestigious and challenging, 1.6 times more likely to view NSU as intellectual and career-oriented, and .32 times as likely to view NSU as a back-up school than non-first choice students.

First-choice students were twice as likely to view NSU as expensive, 1.71 times more likely to view NSU as diverse, 1.56 times more likely to view NSU as fun, 1.4 times more likely to view NSU as supportive, 1.39 times more likely to view NSU as comfortable and friendly and 1.38 times more likely to associate athletics with NSU than non-first choice students.

Summary

Results indicate that pre-matriculation expectations, as operationalized by responses to the ASQ Plus® survey, offer promise as predictors of freshman retention

outcomes. Participants' ratings of NSU along sixteen institutional characteristics (research question 1.1) improved the ability to predict the likelihood of retention outcomes when compared to a null model and a model consisting of participant background and demographic measures. Ratings on four institutional characteristics – campus housing, availability of campus housing, availability of merit scholarships and off-campus activities – contributed to the improved predictive capabilities of the research question 1.1 regression models.

The images students hold of the University also contributed to improved prediction of the likelihood of retention outcomes. The back-up school image improved the ability to predict the likelihood of retention outcomes over null models and models consisting of participant background and demographic measures. The regression model evaluating the predictive power of student images failed to reach statistical significance. However, due to the exploratory nature of this study and the fact that the model approached statistical significance, this analysis concludes that student images are indeed useful for predicting the likelihood of retention outcomes.

The most striking results of this study concern the relationship between the amount and type of financial aid received and freshman retention outcomes. Unsubsidized loans, institutional aid, state grants and PLUS loans all contribute to improvement in the ability to predict the likelihood of freshman retention outcomes compared to a null model and a model consisting of student background and demographic measures.

CHAPTER V

Introduction

       As internal strategic initiatives, external mandates and competitive pressures converged, Norfolk State University was challenged to grow its enrollment. The University adopted an enrollment growth strategy that entailed two objectives: 1) enroll more new students and 2) retain a higher proportion of enrolled students. Two theory bases, college choice and retention, informed the University's enrollment and retention objectives. The University integrated these two theoretical bases under the conceptual framework of enrollment management (EM). EM refers to both organizational structures/strategies and institutional activities designed to exert influence over the size and characteristics of an institution's student body (Hossler & Bean, 1990). Most salient to this study, EM integrates college choice and retention, viewing the two as related phenomena at opposite ends of a student life cycle continuum. EM's linking of college choice and retention is born out in an expanding body of literature exploring links between the two. Student expectations have emerged in the literature as a nexus between college choice and retention.

       This study, in keeping with the University's twin objectives and consistent with enrollment management's theoretical integration of college choice and retention, explored the relationships between college choice and freshman retention for a sample of new African American freshman enrolled at NSU during the fall 2006 semester. The study explored the relationship between students' pre-matriculation expectations of NSU,

operationalized with items from the ASQ Plus® survey, and freshman retention outcomes. The study was guided by the overarching question: Do students' expectations allow us to better predict freshman retention outcomes?

The study's research questions were:

1. What is the relationship between pre-matriculation perceptions of the institution and freshman retention?

2. What is the relationship between college search measures and freshman retention?

3. What is the relationship between the type and amount of aid received and freshman retention?

4. What is the relationship between students' ranked enrollment preferences for the University and freshman retention?

This study was undertaken to inform campus policy and practice. Specifically, the study sought to identify pre-matriculation predictors of retention which would permit early intervention in the retention process.

Summary of Findings

Logistic regression analyses were utilized to address research questions one, two and three. Pearson's Chi-Square Analyses were used to address research question four. Each of the logistic regression models constructed for this investigation included five demographic measures in the first analysis variable block. Mean combined SAT scores (SAT-V + SAT-M) and high school GPAs were included as they are traditional and widely used correlates of student academic outcomes. Fleming (2002) and others (Kobrin, Patterson, Shaw, Mattern & Barbuti, 2008) have demonstrated the SATs differential predictive validity for African American students and students of other

races/ethnicities. As only African American students were included in this study, combined SAT scores were included to determine their predictive utility in the study's specific setting.

The remaining three block 1 predictors were demographic items of interest. Gender was included because NSU's enrollments have been predominantly female and this study attempted to identify any differences in the models' predictive validity by gender. Student domicile was included as a predictor because of the importance this measure holds for the University's tuition and fee revenues. In-state students dominate enrollment and have increased as a share of enrollments. The University's enrollment growth efforts depend in part on the ability to attract students from out-of-state, as these students pay a higher proportion of the actual cost of education than in-state students. Campus housing status was also included because of its implications for students' experiences at the University. The proportion of students residing on-campus has trended upward in recent years though the majority of students commute.

By and large, the block 1 predictor variables were not useful for predicting freshman retention outcomes. High school GPAs and total SAT scores did not emerge as statistically significant predictors of retention in any of the logistic regression models constructed for this study. This is consistent with internal University analyses which found no relationship between either high school GPA or SAT scores and academic performance (NSU GPA). The lack of a statistically significant relationship between SAT scores and freshman retention may be related to the relatively restricted range of SAT scores for the study sample (see table 23). The middle 50% of test scores for the sample were within 120 points, slightly more than one SAT standard deviation. The same may be

true for high school GPAs. The middle 50% of GPAs for the sample fell within .567 GPA points. The notion of a restricted academic profile range is consistent with an internal analyses (Walke, 2009) of admitted students which revealed that students with higher academic profiles (mean combined SAT –SAT-V + SAT-M) were less likely to enroll at the University. Gender and campus housing status also failed to emerge as statistically significant predictors in any of the regression models.

Table 23. Admissions Profile Distributions

	Mean	Std. Dev	25th	50th	75th
			Percentile		
High School PGA	2.79	.433	2.468	2.733	3.035
Combined SAT	875	90.9	800	860	920

Student domicile status emerged as a statistically significant predictor in two of the models constructed for this study. In-state students were 2.327 times more likely to be retained than out-of-state students in regression model two (search process factors). Student domicile was also a significant predictor in the research question three model (type and amount of financial aid). In-state students were 1.888 times more likely to be retained than out-of-state students. Implications for the domicile findings will be discussed in the summary of findings for research question three below.

Research Question 1.1

Students' pre-matriculation ratings of four institutional characteristics were statistically significant partial correlates of freshman retention. For each one point increase in ratings of quality on-campus housing, availability of on-campus housing, off-campus activities and availability of merit scholarships the odds of being retained versus not retained increased by factors of 6.49, 5.164, 3.9 and 2.285 times, respectively. All of

the characteristics linked to persistence were related to student life and financing. No ratings of academic quality measures were related to retention. This too is consistent with internal analyses. Work on the University's strategic plan (NSU, 2004) identified NSU's poor academic image among prospective students and the greater Hampton Roads community as a significant challenge. Results of this study suggest that ratings of the University's academic quality are not salient to students' decisions to enroll at the NSU.

Research Question 1.2

The only image that emerged as a statistically significant predictor was that of back-up school. The odds of being retained versus not being retained increased by a factor of 3.091 for students who held this image of NSU. This does not appear to be related to differences in admissions profile measures. Differences in mean SAT scores and high school GPAs were not statistically significant for students who indicated the back-up school image and those who did not.

Research Question 2

Measures of the college choice process (when were application schools selected, ratings of guidance counselors' knowledge of NSU) and choice set (number of schools applied to, number of schools admitted to) were not related to freshman retention. These findings were most surprising for guidance counselors' knowledge of NSU as the University has invested significant effort cultivating relationships with guidance counselors from local feeder schools. Earlier research (Muhammad, 2008) found that guidance counselors' support and encouragement was significantly related to the development of postsecondary aspirations for African American students. There were important conceptual distinctions between the two studies. Muhammad's (2008) study

conceived counselor support as a measure of social capital and focused on the predisposition stage of college choice. The current study emphasized the selection stage of the choice process and viewed counselor's knowledge as a potential source of information about the University.

Research Question 3

Four financial aid types were related to freshman retention. The odds of a student being retained versus not retained increased as unsubsidized loan, institutional aid, state grant and PLUS loan amounts increased. There are important distinctions between the four types of aid: PLUS loans are those loans made to parents whereas the other three types are awarded directly to students. State grants are need-based, unsubsidized loans are not need-based, institutional aid can be either need or non-need based. Domicile was also a significant predictor of retention in the research question three model, as in-state students were more likely to be retained than out-of-state students. In light of the differences between in-state and out-of-state tuition costs and the high proportion of students receiving aid at the University, the importance of aid and domicile as retention predictors suggest that cost is a factor in retention outcomes.

Research Question 4

One of the few solid college choice findings reported for African American students is that they are less likely than students from other race/ethnicity groups to attend their first choice institution. Among this study's sample, Norfolk State University was the first choice institution for one-third of the study sample. There were no differences in the proportion of retained and non-retained students among those for whom NSU was the first choice institution and those for whom it was not. There were important

differences between ratings and held images of the University between the two groups. First-choice students rated NSU higher on three measures of academic quality (i.e., academic reputation, majors of interest and academic facilities) than non-first choice students. There were also differences in the held images between the two groups, with higher proportions of first-choice students associating academic images (i.e., selective, prestigious, challenging, intellectual, career-oriented and back-up-school) and campus atmosphere images (i.e., expensive, diverse, fun, supportive, comfortable, friendly and athletics) with NSU than non-first choice students. Despite differences in the pre-matriculation perceptions of the University between the two groups, there were no differences in the proportion of students retained.

Conclusion

This study's findings offer some measure of validation for the conceptual framework linking college choice and retention via students' expectations of their collegiate experiences. Financial aid has emerged as an important factor in college choice and retention and retention processes (Cabrera, Nora & Castaneda, 1992; Kim, 2004; Paulsen & St. John, 1997, 2002; St. John, Paulsen & Carter, 2005). Consistent with the literature, this study found a relationship between type and amount of financial aid received and freshman retention. Increased amounts of four types of financial aid awards (i.e., unsubsidized loans, institutional aid, state grants and PLUS loans) were associated with increases in the odds of a student being retained. These findings are reasonable given the high proportion of the University's students receiving financial aid in general and the high proportion of students who receive need-based aid.

Students' expectations of their collegiate experiences are acknowledged as important elements of the choice (Chapman, 1981) and retention (Tinto, 1987, 1993) processes. This study found some evidence of a relationship between pre-matriculation expectations and freshman retention outcomes. Five pre-matriculation measures of student expectations were related to increased odds of a student being retained. The odds of a student being retained increased as students' ratings of the availability of on-campus housing, quality of on-campus housing, availability of merit scholarships and off-campus activities increased. Students who viewed NSU as a "back-up school" had higher odds of being retained than students who did not select this image of NSU.

The research literature suggests that guidance counselors influence students' predisposition to college and their eventual enrollment (Conklin & Dailey, 1981; Freeman, 2005; Muhammad, 2008; Perna, 2000a; Portes & Wilson, 1976). Chapman (1981) identified guidance counselors as significant persons who influence students' choice process, in part, by influencing students' expectations of their collegiate experiences. This study investigated the role of guidance counselors in the selection phase of the choice process. Two hundred twenty four (224) of the study participants (70.4%) completed the item rating counselor's knowledge of NSU. Forty six percent (46%) of the respondents indicated that their counselors were very familiar with NSU while only 15% indicated that their counselors were not familiar with NSU. The high student ratings of counselors' knowledge of the University are consistent with the research literature's findings of the importance of counselors in the selection process. However, this study did not find a relationship between students' ratings of their counselors' knowledge of the University freshman retention.

Freshman profile measures (i.e., high school GPA and total SAT scores) are the most widely used pre-matriculation predictors of freshman retention (Fleming, 2002; Fleming & Garcia,1998; Moffat, 1993; Tross, Harper, Osher & Kneidinger, 2000) though the predictive validity of these profile measures for African American students has been called into question (Fleming, 2002; Kobrin, Patterson, Shaw, Mattern & Barbuti, 2008). This study was unable to confirm high school GPA and SAT scores as predictors of freshman retention outcomes.

Taken as a whole, the results of this study indicate that the pre-matriculation measures employed in this study have modest predictive utility for freshman retention outcomes. The modesty of this study's findings are likely to related to the particular measures of pre-matriculation expectations utilized in this study and the anomalous nature of the University.

Norfolk State University has a high proportion of low income students (captured by proportion of Pell grant recipients), a high proportion of students receiving financial aid, students with modest admissions profiles and primarily local residence. Changes in the university's strategic focus, as it tries to raise the mean admissions profiles of its freshmen while maintaining fidelity to its historic mission of access, also contribute to its unique nature. The University may differ enough from institutions on which literature has been based to render general assumptions about retention moot.

Limitations and Recommendations for Further Study

The survey's sample represented roughly one-third of the fall 2006 entering freshman class. There were differences between study participants and non-participants along three predictor variables (i.e., domicile, gender and campus housing status). Thus,

caution is warranted when extrapolating the study results to the entire freshman class. Large disparities in the response rates of enrolling and non-enrolling admitted students precluded drawing inferences between the two student groups.

This study operationalized students' pre-matriculation expectations of their collegiate experiences with items from the ASQ Plus® survey. This was in part, a matter of convenience, as the University administered the survey as part of a separate investigation. This study tried to identify patterns of pre-matriculation expectations related to freshman retention outcomes in order to identify those students at risk of attrition at the earliest possible point. Tinto (1987, 1993) related expectations to retention outcomes through the lever of incongruence: the disparity between students' expectations and their actual experiences. Future studies of the choice-retention relationship will benefit from alternate measures of expectations. In particular, future studies including measures of pre-matriculation expectations and measures of post-matriculation experiences will permit the direct measurement of the presence and magnitude of incongruence between pre-matriculation expectations and post-enrollment experiences. Future research projects might derive expectation difference scores by administering the ASQ Plus® survey at two points in time: pre-matriculation and post-matriculation.

Even this strategy has some limitations. Researchers (Attanasi, 1989; Berger and Milem, 1999) have demonstrated that student expectations are most effective as outcome predictors when linked to subsequent behaviors. While the ASQ Plus® survey asks students about their pre-matriculation expectations of the University, it does not ask them how they expect to *behave* at the institution upon enrollment. Administering the the ASQ Plus® survey within a pre-test/post-test research design would yield differences scores in

expectations without a behavioral link to these expectations. Such a survey instrument exists. The College Students Expectations Questionnaire (CSXQ) inquires about the types of activities the student expects to engage in upon enrollment. As such, the CSXQ is consistent with lessons learned from the Attanasi (1989). In that study expectations for college led to subsequent retention outcomes via the *behaviors* students engaged in based upon their expectations. In addition to providing a stronger link to expected student behaviors, the CSXQ is also conceptually aligned with the National Study of Student Engagement (NSSE) survey, which measures the behaviors students actually engage in during the freshman year. With these two instruments, it is possible to compare students' pre-enrollment expectations with their actual behaviors. Differences in expected and actual behaviors, conceptualized as incongruence in Tinto's model, are likely fertile ground for explaining retention outcomes.

This study is also limited by its failure to distinguish between voluntary and involuntary departure. For instance, financial aid emerged as a strong predictor of retention in this study. It is likely that prediction models for students departing for financial reasons would differ from models for students departing for academic or other reasons. Future studies will benefit by including such distinctions in the reason associated with attrition outcomes.

The relationship between the "back-up school" image and freshman retention found in the current study bears further investigation. Students who identified the University as a back-up school had higher odds of being retained than those students who did not select this image. Only 11% of the study participants selected this image, while one-third of participants indicated NSU as first choice school. The following findings

have emerged from the University's internal analyses: higher academic profile students are more likely to apply early but less likely to enroll than lower profile students. Yet, students who apply earlier are more likely to be retained than those students who apply later. Though this study did not find a relationship between entering students' academic profiles and freshman retention, the relationship between the "back-up school" image and freshman retention in conjunction with findings from internal analyses, suggest that the University's efforts to increase the academic profile of entering students will positively impact the University's freshman retention rates.

The strongest findings reported in this study were related to financial aid. Though the study's predictive models used type and amount of financial aid, they did not include a measure income or need. Future studies should include measures of income and financial need. Doing so will permit an examination of the effects of ability to pay as a factor in retention outcomes.

On the whole, this study provides modest support of the choice-retention relationship, suggesting that further exploration in this area is warranted.

APPENDICES

Appendix A: ASQ Survey

NSU
NORFOLK STATE UNIVERSITY.

ADMITTED STUDENT QUESTIONNAIRE PLUS ™

Many characteristics of colleges are important to students in making college choices. Some of these characteristics are listed below. Please indicate below how important each college characteristic was to you in choosing the college that you will attend. Circle the numbers that best represent your ratings.

COLLEGE CHARACTERISTICS

		Not Important	Somewhat Important	Very Important
1.	Academic reputation	1	2	3
2.	Availability of majors of interest to you	1	2	3
3.	Availability of special academic programs (independent study, honors programs, etc.)	1	2	3
4.	Personal attention to students	1	2	3
5.	Quality of academic facilities (library, laboratories, etc.)	1	2	3
6.	Availability of recreational facilities on campus	1	2	3
7.	Quality of on-campus housing	1	2	3
8.	Surroundings (neighborhood, town or city)	1	2	3
9.	Attractiveness of campus	1	2	3
10.	Cost to your family—how much you and your family would have to pay after grants and scholarships (if any) are subtracted from total college costs	1	2	3
11.	Quality of social life	1	2	3
12.	Access to off-campus cultural and recreational opportunities	1	2	3
13.	Opportunities to participate in extracurricular activities	1	2	3
14.	Availability of scholarships based on merit, not financial need	1	2	3
15.	Quality of computer facilities	1	2	3
16.	Availability of housing on campus	1	2	3

IMPORTANCE TO YOU

[16]

Please provide the following information about the colleges to which you applied.

17. **Including our college, to how many institutions did you apply?** _____

18. **Including our college, to how many of these institutions were you admitted?** _____

19. a) Do you plan to enroll in college within the next 12 months?　　1　Yes　　2　No

   If "yes", where? (Name) _____ (City/State) _____

   b) On the lines below please list your top three choices among all the colleges to which you were admitted. Include the college you will be attending if it was one of your top three choices.

   First　(Name) _____ (City/State) _____

   Second　(Name) _____ (City/State) _____

   Third　(Name) _____ (City/State) _____

20. On the remaining lines please list any other colleges to which you applied. Circle YES for each college from which you have received formal notification of admission.

		Admitted?			Admitted?
College Name	City/State	Yes	College Name	City/State	Yes
College Name	City/State	Yes	College Name	City/State	Yes
College Name	City/State	Yes	College Name	City/State	Yes
College Name	City/State	Yes	College Name	City/State	Yes

[77]

From your list of colleges in question 19 above, in columns A and B below print the names of two other colleges to which you were admitted. Using the scale shown below, please rate our college and Colleges A and B on each of the college characteristics. If you were admitted to our college and one other college only, do not use column B. **If you can't rate a characteristic for one of the colleges or it does not apply, please circle zero for that college.**

COLLEGE CHARACTERISTICS	OUR COLLEGE					A:_____					B:_____				
	Poor/Fair	Good	Very Good	Excellent	Can't rate	Poor/Fair	Good	Very Good	Excellent	Can't rate	Poor/Fair	Good	Very Good	Excellent	Can't rate
21. Academic reputation	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
22. Availability of majors of interest to you	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
23. Availability of special academic programs (independent study, honors programs, etc.)	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
24. Personal attention to students	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
25. Quality of academic facilities (library, laboratories, etc.)	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
26. Availability of recreational facilities on campus	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
27. Quality of on-campus housing	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
28. Surroundings (neighborhood, town or city)	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
29. Attractiveness of campus	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
30. Cost to your family—how much you and your family would have to pay after grants and scholarships (if any) are subtracted from total college costs	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
31. Quality of social life	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
32. Access to off-campus cultural and recreational opportunities	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
33. Opportunities to participate in extracurricular activities	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
34. Availability of scholarships based on merit, not financial need	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
35. Quality of computer facilities	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0
36. Availability of housing on campus	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0

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Please continue to rate the same colleges as A and B throughout the questionnaire.

From the lists below, please circle all words or phrases that you would say are the most widely-held images of our college and colleges A and B.

37. **OUR COLLEGE**

Isolated	Career-oriented	Selective	Average	Inexpensive
Prestigious	Not well-known	Athletics	Challenging	Supportive
Fun	Comfortable	Friendly	Expensive	Diverse
Intellectual	Back-up school	Partying	Manageable academics	Other_____

38. **COLLEGE A:** _____

Isolated	Career-oriented	Selective	Average	Inexpensive
Prestigious	Not well-known	Athletics	Challenging	Supportive
Fun	Comfortable	Friendly	Expensive	Diverse
Intellectual	Back-up school	Partying	Manageable academics	Other_____

39. **COLLEGE B:** _____

Isolated	Career-oriented	Selective	Average	Inexpensive
Prestigious	Not well-known	Athletics	Challenging	Supportive
Fun	Comfortable	Friendly	Expensive	Diverse
Intellectual	Back-up school	Partying	Manageable academics	Other_____

[201]

This section asks you to compare our college with colleges A and B on the quality of information provided to you. For each source listed, rate the quality of information provided to you by our college and by colleges A and B. **If a given type of information was not available from one of the colleges or not used by you, circle zero for that college.**

SOURCES OF INFORMATION		OUR COLLEGE					A:_____					B:_____				
		Not used	Poor/Fair	Good	Very Good	Excellent	Not used	Poor/Fair	Good	Very Good	Excellent	Not used	Poor/Fair	Good	Very Good	Excellent
40.	Visits by admissions staff at your high school	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
41.	College-sponsored meetings in your home area	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
42.	College publications (catalogs, brochures, etc.)	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
43.	College videos or CD-ROMs	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
44.	College web site	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
45.	Communications about financial aid (not the aid decision)	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
46.	Electronic communication with the college	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
47.	Campus visit	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
48.	On-campus admissions interview	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
49.	Contact with the college after you were admitted	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
50.	Contact with faculty from the college	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
51.	Contact with coaches	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
52.	Contact with graduates of the college	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
53.	Contact with students who attend the college	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4

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Please provide the following information about college costs and financial aid, if applicable, at our college and colleges A and B.

54. Was either financial aid or the cost of attending a significant factor in your decision to enroll in the college you plan to attend?

   1 Yes   2 No

		OUR COLLEGE	A: _____	B: _____
55.	Did you apply for need-based financial aid?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
56.	Were you offered need-based financial aid?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
57.	Were you offered a non-need-based scholarship *by the college* in recognition of your athletic, musical, artistic, or academic talent?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
58.	Did your financial aid package include:			
	Grants or scholarships?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
	One or more student loans?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No
	A work package or campus job?	1 Yes 2 No	1 Yes 2 No	1 Yes 2 No

59. After subtracting grant and scholarship awards, if any, please rate the cost to you and your family of attending each college, using a scale of 1 (Very low) to 8 (Very high):

   OUR COLLEGE:_____   A:_____   B:_____

60. Please answer the following questions specifically about **the college you are planning to attend**:

   Check here ☐ if you did not apply for financial aid at the college you will attend.   **OR**

   Check here ☐ if you applied for but did not receive any financial aid from the college you will attend.

   If you DID receive financial aid from the college you will attend, please list the amounts of financial aid awarded by that college **for the first year**:

   Work $_____   Need-based scholarship/grant $_____
   Student loan $_____   Merit-based scholarship $_____

                    TOTAL $_____

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61. How are your parents/guardians financing their contribution toward your college education? (Circle all that apply)

   1 From current income
   2 From past savings (including tuition prepayment plans, Uniform Gifts to Minors, etc.)
   3 From parent educational loans (e.g., Federal PLUS, etc.)
   4 From other parent loans (including home equity credit line, credit cards, etc.)
   5 Help from relatives, friends, etc.
   6 Employer's tuition benefit

62. Which of the following categories best represents your average grades in high school? (Circle one answer)

   1 A (90-100)   2 B (80-89)   3 C (70-79)   4 D or below (69 or below)

63. What were your highest scores on the following college admission tests?

   SAT-Critical Reading _____ SAT-Math _____ SAT-Writing _____ ACT Composite _____

64. How do you describe yourself? (Circle one answer)

   1 American Indian or Alaskan Native
   2 Asian, Asian American, or Pacific Islander
   3 Mexican American or Chicano
   4 Puerto Rican
   5 Latin American, South American, Central American, or other Hispanic
   6 Black or African American
   7 White
   8 Other

65. Are you a resident of the state in which our college is located?   1 Yes   2 No

66. How far is our college from your home? (Circle one answer)

   1 Less than 50 miles   2 51 to 100 miles   3 101 to 300 miles   4 301 to 500 miles   5 More than 500 miles

67. Which of the following best describes the type of high school you attended? (Circle one answer)

   1 Public   2 Independent, Not Religious Affiliated   3 Independent, Catholic   4 Other Independent, Religiously Affiliated

68. What was the approximate income of your parents or guardians before taxes last year? (Circle one answer)

   1 Less than $30,000
   2 $30,000 to $39,999
   3 $40,000 to $59,999
   4 $60,000 to $79,999
   5 $80,000 to $99,999
   6 $100,000 to $149,999
   7 $150,000 to $199,999
   8 $200,000 or higher

69. What is the zip code of your home address? _____

70. What is your gender?   1 Female   2 Male

[336]

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71. Was Norfolk State University your:

   1 First choice   2 Second choice   3 Third choice or lower

72. How important was the availability of financial aid based on need in choosing the college you will attend?

   1 Not important   2 Somewhat important   3 Very important

73. When did you first start choosing which schools to apply to?

   1 Prior to your junior year
   2 Fall of your junior year
   3 Spring of your junior year
   4 Summer before your senior year
   5 Fall of your senior year
   6 After December of your senior year

74. How knowledgeable was your guidance counselor about Norfolk State University?

   1 Not familiar   2 Somewhat familiar   3 Very familiar

Please use the space below for any comments you would like to share with us about our college's admission program.

Thank you very much for taking the time to complete this questionnaire.

Appendix B: Regression Analyses Variable Blocks

Regression Analysis Block 1: Demographic and Profile Measures		
Domicile	1 – In-state	0 – Out-of-State
Gender	1 – Male	0 - Female
Fall Housing Status	1 – On-campus	0 – Off-campus
High School GPA	Continuous	
Total SAT (SATM + SATV)	Continuous	

Regression Model 1.1 Block 2: Ratings of NSU

Academic Reputation	Continuous
Majors of Interest	Continuous
Special Academic Programs	Continuous
Personal Attention	Continuous
Academic Facilities	Continuous
Recreational Facilities	Continuous
Quality of On-campus Housing	Continuous
Campus Surroundings	Continuous
Campus Attractiveness	Continuous
Cost to Family	Continuous
Quality of Social Life	Continuous
Off-campus Activities	Continuous
Extracurricular Opportunities	Continuous
Availability of Merit Scholarships	Continuous
Quality of Computer Facilities	Continuous
Availability of On-campus Housing	Continuous

Regression Model 1.2 Block 2: Images of NSU

Isolated	1 - Selected	0 – Not Selected
Prestigious	1 – Selected	0 – Not Selected
Fun	1 – Selected	0 – Not Selected
Intellectual	1 – Selected	0 – Not Selected
Career-oriented	1 – Selected	0 – Not Selected
Not Well-known	1 – Selected	0 – Not Selected
Comfortable	1 – Selected	0 – Not Selected
Back-up School	1 – Selected	0 – Not Selected
Selective	1 – Selected	0 – Not Selected
Athletics	1 – Selected	0 – Not Selected
Friendly	1 – Selected	0 – Not Selected
Partying	1 – Selected	0 – Not Selected
Average	1 – Selected	0 – Not Selected
Challenging	1 – Selected	0 – Not Selected
Expensive	1 – Selected	0 – Not Selected
Manageable Academics	1 – Selected	0 – Not Selected
Inexpensive	1 – Selected	0 – Not Selected
Supportive	1 – Selected	0 – Not Selected
Diverse	1 – Selected	0 – Not Selected

Regression Model 2 Block 2: College Choice Measures

NSU First Choice	1 – Yes	0 – No
Number of Colleges Applied to	Continuous	
Number of Colleges Admitted to	Continuous	
When were Application Schools Selected	Continuous	
Guidance Counselor's Knowledge of NSU	Continuous	

Regression Model 3 Block 2: Financial Aid Awards

Institutional Aid Award	Continuous
Need-based Grant Award	Continuous
State Grant Award	Continuous
PLUS Loan Award	Continuous
Private Loan Award	Continuous
Private Scholarship Award	Continuous
Subsidized Loan Award	Continuous
Unsubsidized Loan Award	Continuous
Work Study Award	Continuous

Appendix C: Logistic Regression and Chi-Square Analysis Syntax

/* Model 1.1: Ratings of NSU */

LOGISTIC REGRESSION VARIABLES RETAINED
 /METHOD=ENTER B1_dom2 B1_gender B1_housing B1_HSGPA B1_totalsat
 /METHOD=FSTEP(COND) QU21 QU22 QU23 QU24 QU25 QU26 QU27 QU28
QU29 QU30 QU31 QU32 QU33 QU34 QU35
  QU36
 /CONTRAST (B1_housing)=Indicator(1)
 /CONTRAST (B1_dom2)=Indicator(1)
 /CONTRAST (B1_gender)=Indicator(1)
 /PRINT=GOODFIT CI(95)
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

/* Model 1.2: Held Images */

LOGISTIC REGRESSION VARIABLES RETAINED
 /METHOD=ENTER B1_dom2 B1_gender B1_housing B1_HSGPA B1_totalsat
 /METHOD=FSTEP(COND) QU371 QU372 QU373 QU374 QU375 QU376 QU377
QU378 QU379 QU3710 QU3711 QU3712
  QU3713 QU3714 QU3715 QU3716 QU3717 QU3718 QU3719
 /CONTRAST (B1_housing)=Indicator(1)
 /CONTRAST (B1_dom2)=Indicator(1)
 /CONTRAST (B1_gender)=Indicator(1)
 /CONTRAST (QU372)=Indicator(1)
 /CONTRAST (QU377)=Indicator(1)
 /CONTRAST (QU371)=Indicator(1)
 /CONTRAST (QU3716)=Indicator(1)
 /CONTRAST (QU3715)=Indicator(1)
 /CONTRAST (QU376)=Indicator(1)
 /CONTRAST (QU3710)=Indicator(1)
 /CONTRAST (QU3718)=Indicator(1)
 /CONTRAST (QU373)=Indicator(1)
 /CONTRAST (QU3712)=Indicator(1)
 /CONTRAST (QU375)=Indicator(1)
 /CONTRAST (QU3719)=Indicator(1)
 /CONTRAST (QU3717)=Indicator(1)
 /CONTRAST (QU378)=Indicator(1)
 /CONTRAST (QU3711)=Indicator(1)
 /CONTRAST (QU3713)=Indicator(1)
 /CONTRAST (QU379)=Indicator(1)
 /CONTRAST (QU374)=Indicator(1)
 /CONTRAST (QU3714)=Indicator(1)
 /PRINT=GOODFIT CI(95)
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

```
/* Model 2: Choice Behaviors/Factors */

LOGISTIC REGRESSION VARIABLES RETAINED
  /METHOD=ENTER B1_dom2 B1_gender B1_housing B1_HSGPA B1_totalsat
  /METHOD=FSTEP(COND) CC_nsufirstchoice CC_Q17 CC_Q18 CC_Q73 CC_Q74
  /CONTRAST (B1_housing)=Indicator(1)
  /CONTRAST (B1_dom2)=Indicator(1)
  /CONTRAST (B1_gender)=Indicator(1)
  /CONTRAST (CC_nsufirstchoice)=Indicator(1)
  /PRINT=GOODFIT CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).




/* Model 3: Financial Aid */

LOGISTIC REGRESSION VARIABLES RETAINED
  /METHOD=ENTER B1_dom2 B1_gender B1_housing B1_HSGPA B1_totalsat
  /METHOD=FSTEP(COND) FA_INSTAID FA_NEEDGRANT FA_PLUSLOAN
FA_PRIVLOAN FA_PRIVSCHOL FA_STATEGRANT
  FA_SUBLOAN FA_UNSUBLOAN FA_WORKSTUDY
  /CONTRAST (B1_housing)=Indicator(1)
  /CONTRAST (B1_dom2)=Indicator(1)
  /CONTRAST (B1_gender)=Indicator(1)
  /PRINT=GOODFIT CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

/* Chi-square analyses of retention by NSU first choice status */

CROSSTABS
  /TABLES=CC_nsufirstchoice BY RETAINED
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ CC PHI ETA CORR
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

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VITA

James Tomlin Walke

Birthdate: January 25, 1971

Birthplace: Portsmouth, Virginia

Education: 2000 – 2010   The College of William and Mary
                             Williamsburg, Virginia
                             Doctor of Philosophy

               1989 – 1995   The University of Virginia
                             Charlottesville, Virginia
                             Bachelor of Arts, Psychology