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Examining Gender Differences in Persistence in Higher Education Among African American Students

Yvonne Townsend

University of Kentucky, townsend.652@osu.edu

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ABSTRACT OF THESIS

Examining Gender Differences in Persistence in Higher Education Among African
American Students

This Study examined issues related to persistence in higher education among African American students, using the prominent model proposed by Vincent Tinto. The intentions were to examine the growing gender gap among African American students. The study examines factors from the Tinto model such as high school GPA, College GPA, college social integration and academic integration to try and explain the effects of gender among African American students. This research also attempts to elaborate the Tinto model by considering high school extracurricular activities as a pre-entry attribute that has an effect on persistence in higher education. Use of the Tinto model, even in an elaborated state, did not explain the effects of gender among African American students. This research suggests that other factors not included in the model have some effect on student persistence; one such factor could be gender socialization which can lead to different patterns in educational achievement.

Keywords: African Americans, Gender Gap in Educational Attainment,
        Persistence in Higher Education, Gender Socialization, Tinto's
        Integrationist Model

Yvonne Townsend
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Date

Examining Gender Differences in Persistence in Higher Education Among African
American Student

By

Yvonne Townsend

Dr. Edward Morris	
Co-Director of Thesis	

Dr. Brea Perry	
Co-Director of Thesis	

Dr. Keiko Tanaka	
Director of Graduate Studies	

4/28/2011	
Date	

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THESIS

Yvonne Townsend

The Graduate School
University of Kentucky
2011

Examining Gender Differences in Persistence in Higher Education Among
African American Students

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THESIS

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A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Arts in the
College of Arts and Sciences
at the University of Kentucky

By

Yvonne Townsend

Co-Chairs: Dr. Edward Morris, Professor of Sociology

And Dr. Brea Perry, Professor of Sociology

Lexington, Kentucky

2011

In Loving Memory of My Grandmother
Willie Mae Robinson
Thank you for your strength

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Chapter One:

Introduction

For many African American men, just the mere accomplishment of attending college after high school is a major triumph. For these individuals entering college is a sign that they have overcome the obstacles of death and incarceration that plague today's adolescent African American males; but does entrance into higher education mean the end of struggle for African American males (Boyd 2007)? A thirty-five percent college graduation rate, the lowest among all race and ethnic groups regardless of sex, would lead to a definitive no (Journal of Blacks in Higher Education 2006). Degree attainment continues to be as much of an issue as low enrollment rates, a predicament reflected in 2002, when African American males were a little over four percent of the population of students enrolled in a postsecondary institution, the same percent as in 1976 (Harper 2006). The plight of African American males, however, is not indicative of the entire racial group because African Americans' enrollment rate since 1976 has increased nearly four percent. This gain has been largely due to increases in the enrollment and attainment of African American females (Harper 2006). What then has led to such a large disparity between African American males and females?

Examining such an issue is a twofold process because African American males lag behind their female counterparts in both enrollment and attainment. It is clear that fewer African American males graduate from college than the number who enters into postsecondary education. The goal for educators and

institutions is to increase the number of African American males who continue their education from year to year, persist, and eventually go on to obtain degrees. It should be noted that the number of female college graduates has increased substantially over the last thirty years (Buchmann et al 2008; Conger and Long 2010; National Center for Educational Statistics 2010). The previous gender gap in higher education attainment that favored men has all but disappeared across racial/ethnic groups; today women earn the majority of four-year college degrees (Buchmann et al 2008; Conger and Long 2010; NCES 2010). The gender gap in educational attainment is most evident among African Americans. In 2007, an estimated sixty-seven percent of all degrees conferred to African Americans were received by females (NCES 2010). This figure is ten percent higher than the difference between European American females and males. This difference has increased over the last ten years. Such statistics continue to reflect the plight of African American males in higher education and reveal that there is a struggle still to overcome for a group that appears to have succeeded.

Literature Review

Gender Socialization and Education

One way in which to examine the growing gender gap in attainment in higher education is to examine issues related to academic preparation and prior school related experiences. Part of this examination has been to explore gender differences in achievement during primary and secondary education. Over the years, researchers have identified areas of disadvantage for both genders in primary and secondary education. Studies continue to find that female students

lag behind males in standardized test scores for math; this is despite having higher grades in related courses (Mickelson 1989; Buchamnn et al. 2008; Downey and Yuan 2005). Male students are disadvantaged in reading, writing and overall attainment, with males having higher dropout rates in high school (Mickelson 1989; Buchamnn et al. 2008; Downey and Yuan 2005). Mickelson (1989) suggests that sex-role or gender socialization has an effect on educational outcomes.

Gender is often considered a set of characteristics and behaviors that are shared by individuals of the same sex (Francis 2006). There is a long going debate as to whether or not the characteristics associated with each category are innate behaviors that are simply a part of what it means to be biologically a male or female. Despite the ongoing debate, there is no doubt that there are real consequences of gender expectations in society. The expected behaviors, styles of dress, choice of language, and acceptable forms of expression are evident in every classroom at all levels from preschool to doctoral programs. Even more evident is that there are differences between the ways in which males and females should follow these sets of rules. The process by which individuals learn appropriate gender behavior is known as gender socialization. As previously mentioned researchers have considered gender socialization as a factor in educational attainment (Mickelson 1989; Buchamnn et al. 2008; Downey and Yuan 2005).

Mickelson (1989) identifies gendered behavior such as girls being socialized to behave dutifully and follow teaches orders as a mechanism that

enables them to do well in school. This is especially important because males are often expected to challenge authority which can be detrimental to their classroom experience (Mickelson 1989; Connell 1996). This is in stark contrast to the gender socialization of girls that promotes passivity and cooperation. Mixed research has come out regarding teacher, student interaction within the classroom. Downey and Yuan (2005) found that teachers rated female students as better in-class citizens, which was positively associated with academic achievement. Nevertheless, it appears that the educational environment is not the same for all students. This is even clearer when considering gender socialization in education from an intersectional perspective.

Intersectionality is a framework that comes from feminist theory that encourages researches to examine the experiences of individuals with a multidimensional approach (Collins 1989). Black feminism brought us the recent contribution of intersectionality, which is the basic idea that we as individuals do not experience each aspect of our identity separately; there is not a moment when a woman is just a woman. She is simultaneously an embodiment of her womanhood, racial/ethnic group, class status, sexual orientation, marital status, occupation etc, which all contribute to how she experiences the world around her and how the world responds to her (Aleman 2003). This aspect of feminism emanates from the experiences of women of color and varying backgrounds who felt that the voices of first and second wave feminist were often those of middle class white women. The importance of intersectionality can be seen in the lives

of all individuals. Intersectionality is evident in gender socialization when we considered it's racial and class based components.

Julie Bettie (2003) highlights the intersectionality of gender socialization in her book, *Women Without Class*. She finds differences in the gender performance of girls in a racially and ethnically diverse high school. The girls who were the highest achievers, a group of middle class European American girls, in the school had a stereotypical gender performance. These girls were muted in their sexuality, outgoing and active in school functions. They were readily accepted in their school, with teachers immediately recommending them to be studied when Bettie made her initial request. By comparison, the Mexican American female students were mainly placed in lower track vocational courses, were seen as overly sexual and academically disengaged. The experiences of African American women in the literature are quite different from those of European American women (Lowe 2003; Bettie 2003; Morris 2005. African American female students, like the European American counterpart outperform males of their racial group. However, the reasoning behind this trend is greatly intertwined with the fate of their male peers and residential segregation in school attendance patterns.

Edward Morris (2005; 2006) discusses the gender critique of African American females in several of his works concerning African American adolescents. In the school he examined, the African American female students were continually critiqued for their gender performance. They were told to dress more conservatively or less like a "hoochie-mama", were instructed on how to sit,

to speak quietly and how to be less assertive. All which would bring them in line with a more middle class European American performance of gender. The school went as far, with support of several teachers, to have a club that taught the female students "ladylike" behaviors. However, many teachers felt that behaviors such as talking out of turn were less problematic for African American females than males because they usually were better students and received better grades.

Connell (1996) identifies how masculinity affects males' educational attainment. Connell discusses the rigidity of hegemonic masculinity a form of masculinity that is culturally exalted and reaffirmed within the educational system, as being harmful to boys through the construction of gender hierarchies. School becomes a way to increase one's masculinity through participation in acceptable behaviors considered to be thoroughly masculine, such as sports. Jackson and Dempster (2009) discuss a discourse regarding cool masculinity and its association with ideology is that it is "uncool to work". This discourse places them at odds with the credentials discourse which requires individuals to enhance their credentials to have successful careers. In regards to higher education, some male students fully acknowledge that women are outperforming men in higher education but the ethos has become that male students "don't try as hard" as female students or that male student's take harder classes (Jackson and Dempster 2009). Thus males are left to rationalize their place in higher education in a way that does not threaten their masculinity by either invoking an ethos of laziness or seeing education as a place that is not for them; each of which offer

alternatives to a reality that questions their superiority. Despite the cultural

support for hegemonic masculinity not all males are allowed to benefit from the

status brought about by being male. Regarding the hierarchical nature of

masculinities Connell states:

> Hegemonic Masculinity is hegemonic not just in relation to other
> masculinities, but in relation to the gender order as a whole. The hierarchy
> of masculinities is an expression of the unequal shares in that privilege
> held by different groups of men(1996: 209).

The historical gender socialization of African American males was that of

an inferior other to European American males. Their perceived brooding physical

strength and "uncontrollable" sexuality has always been considered a threat.

Attempts have always been made to emasculate African American male, first by

stripping of the right to participate in the patriarchy of American society by

denying them the ability to provide for their families, then by dehumanizing and

looking down upon their performance of masculinity. In response to this African

American males adopted what is defined as a "cool pose".

> "Cool pose is a ritualized form of masculinity that entails behaviors,
> scripts, physical posturing, impression management, and carefully crafted
> performances that deliver a single, critical message: pride, strength, and
> control" (Majors and Billson, 2002: 4).

Cool pose is a coping mechanism that allows African American males to deal

with the stress, disenfranchisement and low self-esteem that has developed

throughout the course of American history for African American males. One of

the earliest encounters with oppression that African American males face is their

virtual exclusion from the social institution of education. The educational

institution becomes a place where they often face failure, and alienation.

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Consistently punished at higher rates than their peers of all racial groups, they

quickly learn that their persistence and culture is unwelcome in the field of

education. It is with this framework that we view the experiences of African

American males in education, which will allow us to better understand their

differing experiences compared to females and their European American male

counterparts.

African American Males in Education

The struggles that African American males face in education are not

isolated to higher education. Their entire academic careers are riddled with

concern and low achievement when compared to their female counterparts. The

contentious relationship between African American males and the social

institution of education is symptomatic of the problems that African Americans in

general face regarding education. The edification of African American males

faces early barriers in their perceived academic ability, learning capacity and

handling of conduct (Buchmann et al 2003; Ferguson 2001; Noguera 2003).

Early in their academic careers, a considerable percentage of African American

males are labeled as learning disabled and behaviorally deviant (Ferguson 2001;

Noguera 2003). They face the highest rates of placement in special education

classes among students who are not developmentally delayed (Noguera 2003).

The disconnect between the educational system and African American males in

terms of acceptable behavior reflects the marginalization of African Americans in

today's society. Ferguson astutely notes:

> "…African American boys who are doubly displaced: as black children,
> they are not seen as childlike but adultified; as black males they are

denied the masculine dispensation constituting white males as being 'naturally naughty' and are discerned as willfully bad"(2001: 80).

The separation of similar behaviors of African and European American males has been highlighted, revealing how "typical" male behaviors when performed by African American males are negatively viewed within the education system and subject to harsher punishment than when similar behaviors are performed by European American males (Ferguson 2001; Morris 2005).

These early childhood education experiences have a lasting effect on African American males. The rate at which African American males fall behind their peers increases as they progress with high levels of remediation and smaller numbers in honors and AP courses (Noguera 2003). Their insufficient academic preparation coupled with a lack of support leaves most African American males with few choices in secondary education. For some, academic and behavioral issues become conflated within the learning environment; this fusion becomes increasingly problematic as the stakes of education mount with secondary education. In high school African American males face higher rates expulsion or forced school transfers as a result of behavioral problems (Bowditch 1993). The intensifying punishments faced in secondary education are related to increases of criminalization of deviant behaviors in schools and the incorporation of the juvenile court system in attempts to control unwanted behaviors within the educational system. What this means for African American male adolescents is that educational gaps are increased from primary school as there are fewer attempts to aid them in closing gaps when schools have alternative methods to remove students seen as "problems". Today, high school dropout rates of

fourteen percent, lower test scores, increases in general educational diplomas among African American males, and reduced college enrollment reflect the culmination of the aforementioned factors in the educational attainment of African American males. The widespread obstacles faced by African American males in their early education helps to illuminate further the accomplishment that is college matriculation (Noguera 2003). Unfortunately, entrance into higher education is not necessarily a complete change of environment for African American males.

Researchers have explored the perceived climate of higher education for African American students and found it to be isolating, particularly at predominately white institutions (PWI). With the majority of African American students now attending PWIs it is important to address these issues of isolation. Scholars have identified the relationship between issues of isolation and institutional racism on campus and expectations for African American students to assimilate to the European American culture of higher education at PWIs (Feagin et al 1996). At PWIs African American students are asked, due to their smaller numbers, to not only speak for their race, but to fully represent them in everything they do; this is a burden that helps contribute to marginalization and isolation on campus (Feagin et al 1996; Winkle-Wagner 2009). Despite the isolating climate that higher education can be for some African American students; many, mainly females, go on to attain their college degrees. What sets these individuals apart from their peers who do not graduate? More importantly, what helps to explain the increasing gaps in attainment between African American males and females?

Tinto's Integrationist Model for Individual Student Departure

For years researchers and institutions have examined factors that affect persistence and attainment for students. A prominent theorist regarding student retention has been Vincent Tinto (1987). Tinto's theory is a longitudinal model that considers the effects of student integration on persistence. Based on the model, educational institutions need to integrate students into either the academic or social systems to increase the likelihood of student persistence. There are several individual student variables that can effect integration to the academic and social systems of an institution. Pre-entry attributes such as family background, prior schooling, skills and abilities can all have an effect on integration. Pre-entry attributes can affect a student's intention, goals and institutional commitment.

Tinto identifies intentions, goals and institutional commitment as having a major effect on student integration. Intentions are important because if students have no true intent to obtain a degree then they will be more likely to leave an institution. Intentions that do not include degree attainment set these individuals outside of the norm or purpose of higher education, making them more vulnerable to external forces and hardships that could influence their decision to drop out. At the same time strong intentions of degree attainment could help an individual persist despite a lack of fit at a particular institution or lower integration into either the academic or social system. Career intentions are noted because they can affect educational needs and perceived fit of an institution. For instance, a student could feel isolated at a particular institution but persist because it is the

best school for their program. Similar effects occur because of goal and institutional commitment. Students who are committed to either their career goals or to their institution are more likely to persist.

Another aspect of Tinto's model that has an effect on student persistence is student experience. A student's experiences in both the academic and social system are important for student integration and persistence. Students' experiences in the academic system are a combination of the formal interactions within the classroom and informal interactions outside of the classroom. These interactions, if positive, can lead a student to feel integrated with the academic culture of the university or particular area of interest. In time, this can lead to an increase in goal or institutional commitment. These interactions can confirm a student's feeling that a particular area of interest is useful for the goal or that the institution matches their academic style. Ultimately, these factors lead to a student's persistence.

Over the years researchers have sought to validate the theoretical assertions presented in Tinto's Integrationist model. Key components of that the model that have been tested include social integration (Pascella and Terezini 1977a), academic integration (Pascella and Terezini 1977b 1979), pre-entry attributes (Braxton et al. 1995) , interactional effects (Jones 2010), institutional effects, separation stage (Elkins et al. 2000) and several attempts of theory elaboration (Berger and Braxton 1998; Berger and Milem 1999; Fischer 2007; Tinto 1982). All of these studies have contributed to our understanding of student attrition in higher education

Pascella and Terezini (1977a) tested the conceptual model proposed by Tinto in 1975 and found general support for the predictive power of both social and academic integration on student attrition. The study reveals a significant difference between "stayers" and "leavers" in terms of the predictive power of social and academic integration. Students who stayed at their original institution were more likely to find their academic program interesting and practical, both individual measures of academic integration. Leavers were high on apathy towards their academic program. Social integration occurred when students found their non-academic lives to be "challenging" and appealing. The most significant predictor of student attrition, however, was the number of informal interactions with faculty; of which stayers reported more informal faculty interactions.

Pascella and Terezini (1977b) expand further regarding the predictive value of faculty interaction on student persistence. In exploring different types of faculty interaction, Pascella and Terezini find that increases in interactions related to intellectual development, course material, career concerns and academic advising are significant in predicting students who continue at their current institution, while controlling for student sex, academic achievement and personality factors. These studies help to advance understandings of social verses academic integration and begin to consider more individual student characteristics, which is an important step in moving from the theoretical workings of Tinto to applicable approaches to consider in order to increase student persistence and lower attrition.

With the increasing diversity in higher education, it is important to identify contributors to persistence for diverse populations. Differences have been found regarding the type of faculty interactions that are associated with persistence in males and females (Pascella and Terezini 1979). Males benefited most when faculty interactions involved intellectual matters and help to resolve a personal problem, which is consistent with other research; whereas when looking at interactional effects female persistence was associated with informal faculty interactions related to course information and academic programs. Peer group relations were also associated with female persistence related to social integration. Although these studies did not directly compare female to male persistence, we begin to see that there is value in categorizing students and looking for interactional effects within student populations instead of solely discussing general trends in persistence. This is particularly important in today's environment when females outnumber male students in enrollment, persistence and attainment, and factors that affect males, particularly African American males, still need to be examined separately from those of females as evidence by their lower attainment rates.

While the central tenet of Tinto's model is that students need to integrate into the systems of a higher education institution, he notes other important contributors to student persistence. Following the longitudinal nature of Tinto's model, Braxton et al. (1995) examined how initial (pre-entry) students' commitment and expectations influence social and academic integration, which following Tinto's model, influence subsequent commitment, resulting in higher

rates of persistence. Braxton et al. found that the "extent to which expectations for academic and intellectual development are being fulfilled the greater the degree of academic integration and social integration experienced by students"(1995: 604).They also found that social and academic integration had a direct effect on subsequent commitment to the students' current institution and goal of graduating from college. However, they did not find support for any direct effect of integration on intent to remain in school.

Other contributors to student persistence presented in Tinto's model such as pre-entry academic preparation have found mixed support in the literature. Some studies have found it to have no association with integration and persistence and other studies have found high school preparation in terms of GPA, class rank, SAT scores, and AP tests to have an association with integration and persistence (Clark and Crawford 1992; Conger and Long 2010; Thomas 1981). In addition to academic preparation, first generation status (Ishitani 2006) has also been found to affect persistence in higher education. With the exception of academic preparation, many pre-entry attributes that have been incorporated into Tinto's model are not factors that parents, students or educational institutions can proactively alter in an effort to increase educational attainment. However, I propose that researchers expand their understanding of educational benefits acquired from high school by incorporating high school extracurricular activities as possible contributors to persistence in higher education. The logic for this integration is expanded on in the following section.

High School Extracurricular Activities as a Pre-entry Attribute

Scholars have examined the relationship between high school experiences and college enrollment. Research has shown that factors such as high school grades, class rank, test scores, parental involvement, socioeconomic status, and extracurricular activities have a positive effect on college enrollment for high school students (Dumais and Ward 2009; Gabler and Kaufman 2006; Smith and Zhang 2009a 2009b) . Extracurricular activities such as school music groups, interscholastic team sports, and student government have been shown to be associated with college matriculation. Activities performed outside of school like private dance and music classes are also highly associated with enrollment in college. Few researchers have examined the relationship between high school extracurricular activities, both those performed in school and out of school, in trying to understand persistence in higher education. The lack of scholarly exploration of this relationship between high school extracurricular activity participation and college persistence is astonishing, especially in light of research regarding the effect of college participation in extracurricular activities which has been found to lead to social integration.

In analyzing the patterns of extracurricular activity participation from high school to college, Berk and Goebel (1984) found that students who had high rates of extracurricular participation in high school maintained higher levels of participation in college compared to their less active peers; though they also found greater numbers of decline in number of activities participated in from high school to college, possibly reflecting adjustments due to academic load. Hanks

and Eckland (1976) found that high school extracurricular activities have a direct association with collegiate extracurricular activities. In line with Tinto's view of integration, they state "extracurricular activities…serves [sic] an important integrative function in school and college by fostering the acquisition and transference of status across adolescent and adult social systems"(292). The recognition of a learned skill set in association with extracurricular activities expands the view of high school extracurricular participation from solely a place of leisure, conformity and adolescent culture to understanding these activities to be a part of the process of socialization.

Lindsey (1984) found a strong association with participation in high school extracurricular activities and social participation in young adults, revealing a lasting effect of schooling on social behavior. Considering extracurricular activities as a pre-entry attribute within the context of Tinto's model will place extracurricular participation in line with academic preparation as a pre-entry attribute reflecting acquired knowledge and skill.

While lasting effects of high school academic preparation on persistence in higher education are well explored, few researchers have explored if high school extracurricular activities, as a pre-entry, can have a similar lasting effect on social integration in college. It is the goal of this study to explore this issue and gender differences within African American students to better understand persistence among this population. We can better examine the lasting schooling of high school extracurricular activities by incorporating activities performed in

school and outside of school into the Tinto model that is based on social and academic integration.

Gender differences have been found to exist in the number and type of extracurricular activities participated in during high school (Dumais 2002; Hanks and Eckland 1976). This is an important point because it could help explain differences in social integration in higher education. Pascella and Terezini (1977a 1977b), as previously mentioned, found differences in social and academic integration that help predict persistence in higher education. One such difference was that peer relations were an important indicator of social integration for female but not male students. This could be a lasting effect of schooling through extracurricular activities because of the different types of activities in which males and females typically participate. Male students are more likely to participate in sports activities which have been found to have positive effects on academic achievement (Broh 2002; Buahmann et al. 2008). This is an important factor because gender socialization for males to be aggressive is often a part of the sports culture; in addition to seeing females as inferior, which is affirmed by the community's low interest in girls' sports (Eder 1997). Female students are more likely to participate in non-sports extracurricular activities which are also positively associated with academic benefits (Broh 2002; Cosden et al. 2004). The positive effects of high school extracurricular activity participation warrant further research.

Research Questions:

This paper focuses on issues related to persistence in higher education that ultimately effect attainment for African American males. African American males are the primary interest of this study because their attainment rates are the lowest amongst all race/ethnic and gender groups. As previously mentioned African American males have a graduation rate of thirty-five percent at the Bachelor's degree level. Their low graduation rates at the Bachelor's level combined with their lower attainment rates at the Associate's, Master's, Doctoral and First Professorial levels place them as a prime group of interest for sociological inquiry, practically for applied research, to help alleviate the issues African American males face in higher education. Data collected by the U.S. department of Education reveal that since at least 1997, African American females have had an advantage in degree attainment that has been larger than any other race/ethnic group (NCES 2010). In 2007, European American females earned an estimated fifty-six percent of all degrees conferred to their racial group compared to the estimated sixty-six percent earned by African American females. Similarly, Asian/Pacific Islander female students earned an estimated fifty-five percent of degrees conferred to their race/ethnic group in 2007, which is also substantially lower than the difference between African American females and males. Additionally, since 1997, African Americans have increased the share of all Bachelor's degrees earned by their racial group; this percentage has increased from an estimated eight percent in 1997 to an estimated ten percent in 2007. Collectively such patterns provide some insight regarding the educational

attainment rates of males and African American males. While women are steadily increasing their rate of degree attainment no male racial group lags as far behind as African American males. Moreover, no race/ethnic group of males has lagged as far behind their female counterparts as long as African American males have. Thus, it is important that researchers continue to explore why African American males have the lowest attainment rates.

It is expected that the effect of factors such as high school GPA, college GPA, high school academic preparation, college academic and social integration, major, aspirations and first generation status which are known to be important in persistence in higher education will differ by gender when comparing these effects for African American males and females. In order to explore the differing effects of these factors, this study will use an elaborated version of Vincent Tinto's Integrationist model for persistence in higher education (1987). This paper will explore ways in which persistence in higher education differs between African American males and females, in an attempt to answer the following question.

- What gender differences exist when examining persistence in higher education when using Tinto's integrationist model among African Americans?

Additionally, this research would like to make a significant contribution to the literature through an exploration of high school extracurricular activities and their effects on student persistence in higher education. Throughout the majority of literature on persistence in higher education social aspects of a student's high school experience have been ignored. Considering the gendered differences that have been observed in extracurricular activity participation and the possible

lasting effects high school extracurricular activities can have on social, behavior

this study would like to examine its effects on persistence in higher education.

- In what way does high school extracurricular activity participation affect persistence in higher education? Should it be considered as a pre-entry attribute?

Chapter Summary:

This chapter provides an overview of literature related to persistence in

higher education and gender socialization. It introduces the topic of the growing

gender gap in higher education attainment among African American students and

explores its roots in gender socialization in early educational experiences. This

chapter provides an overview of Tinto's integrationist model for student

persistence and a review of relevant literature in support of its theoretical

assertions. Lastly, it explains the need to view high school extracurricular

activities as a pre-entry attribute within the model to help examine the study's

research questions.

Chapter Two:

Methodology

Sample:

The National Longitudinal Survey of Freshmen (NLSF) data collection began in the fall of 1999 by the Office of Population Research at Princeton University and was funded by the Mellon Foundation[1]. Data was initially to be collected from 35 selective colleges and universities across the United States. The schools were stratified based on the number of African American students attending the institution. Each school was asked to provide the researchers with a certain number of respondents based on their stratification level with an equal number of students coming for the four desired racial groups, Black, White, Asian and Latino students. Of the schools originally asked to participate in the survey only 28 agreed to provide the researchers with contact information for entering freshmen that year. 4,573 students were contacted and asked to participate in the survey process; 86% of these students agreed to participate in the initial two hour face to face survey for a total of 3,924 first wave respondents. Students were eligible to be a part of the study if they were enrolled as a first-time freshman and a U.S. citizen or resident alien; foreign students and students returning to higher education were excluded from the survey.

During the first wave of the survey, students were asked to respond to questions regarding their neighborhood, family, and educational environment before

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[1] This research is based on data from the National Longitudinal Survey of Freshmen, a project designed by Douglas S. Massey and Camille Z. Charles and funded by the Mellon Foundation and the Atlantic Philanthropies

entering college. Questions also assessed students' attitudes, aspirations, and motivations at the time of entry. Four follow-up surveys were completed starting with spring 2000 and ending with spring 2003, which encompasses the full four years associated with prompt college graduation. All follow up surveys were completed as phone interviews. Follow-up surveys were used to assess students' social, psychological and academic experiences on campus; individuals who dropped out of college or transferred to a different institution were still surveyed if they wished to continue to be in the study. Four year and six year graduation information was collected through the registrar at the 28 participating universities and the National Student Clearinghouse (NSC), a national non-profit organization that provides diploma and enrollment verification for post-secondary and secondary student degrees.

Missing Data:

Students who were identified as White, Hispanic or Asian were droped from the study because the purpose of the study is to explore the effects of gender on persistence in higher education among African American students. Dropping these race and ethnic groups from the study reduced the number of participants in the study from 3,924 to 1,051. Of these 1,051 African American students, 683 were female and 368 were male. Responses of unknown, don't know and non-response were coded as missing. Missing data was removed on a model by model basis; which is also known as pairwise deletion. Pairwise deletion was used instead of listwise deletion because there were more females in the study and pairwise enabled the researcher to keep as many male subjects

as possible. Additionally, listwise deletion was tested and it did not significantly

affect which variables were significant.

Pairwise deletion was used as opposed to mean imputation because of the

difference in the number of female and male subjects available in the study.

Since the study is meant to explore the effects of gender, mean imputation might

bias the sample more towards "female attributes"

Table 2-1 Descriptive Statistics n=1051

Variables	Total	Female	Male	X^2/t
Gender		.65	.35	
Graduation				
4-Year Graduate	.58	.63	.48	22.75***
6-Year Graduate	.22	.20	.25	—
Never Graduated	.21	.17	.27	—
First Generation Student	.08	.06	.11	9.20**
Non-first Generation Student	.92	.94	.89	—
Historically Black Colleges	.13	.14	.12	.96
Predominately White Institutions	.87	.86	.88	—
Household Income				
<20,000	.14	.14	.14	.64
20,000-49,000	.30	.31	.29	—
>50,000	.56	.55	.58	—
Academics				
High School GPA	3.27	3.31	3.22	-3.54**
College GPA	3.11	3.14	3.06	-2.59*
Declared Major	.61	.61	.62	.27
Undeclared Major	.39	.39	.38	—
High School Courses				
Trades	9.63	9.49	9.91	1.58
Performing Arts	3.58	3.82	3.15	-3.96**
Humanities	8.63	8.67	8.57	-.91
Social Science	3.10	3.05	3.18	.93
History	4.26	4.24	4.29	.49
Science	8.80	8.73	8.92	1.05
Math	2.71	2.65	2.81	1.14
Commitment				
Importance of college	8.52	8.68	8.21	-4.03**
Get Bachelor's	.25	.22	.32	16.30***
Graduate School	.69	.73	.61	—
Pace College	.06	.05	.07	—
External Forces				
Employed	.63	.65	.58	4.57*
Unemployed	.37	.35	.42	—
Off-campus	.08	.08	.08	.10
On-campus	.92	.92	.92	—
Number of visits home	4.32	4.63	3.75	-1.83
Integration				
Peer Academic Integration	4.11	4.17	4.02	-.94
Faculty Academic Integration	3.65	3.73	3.49	-1.81
College Social Integration	4.51	4.08	5.35	7.90***
High School Extracurricular Activities	2.09	2.14	1.99	-3.27**
Out of school Extracurricular Activities	1.40	1.42	1.38	-1.87

Data:

Dependent Variable

The Primary dependent variable evaluated is graduation, which is coded as 1= 4 year graduation, 2= 6 year graduation and 3= never graduated. As previously stated the graduation variables were collected through the university registrar of participating institutions and the NSC. Students were considered to be four year graduates if they earned their degree during or before the spring of 2003, and if they earned a "joint degree" within one year beyond the spring of 2003. These graduation rates were for students who completed their degrees at either their original institute or a transfer school. The six-year graduates were individuals who graduated from their original institute or a transfer school between the end of summer 2003 through spring 2005. Students who were still enrolled at an institute having yet to earn a degree and students who "disappeared" from their original or transfer institute without earning a degree were considered to be non-graduates. The second dependent variable college GPA was calculated using student report of number courses taken and grades received during their first year of college. The third dependent variable to be examined is college social integration. College social integration is being measured through the average number of hours a week a student reports participating in the following activities: extracurricular activities, playing or practicing sports, attending sporting events, attending parties and socializing with friends. The scale ranges from 0 to 19.44 hours a week.

Independent variables

The following variables are the primary independent variables of interest outside of gender: the two central variables in Tinto's model, social and academic integration, in addition to two variables that will measure the extent of high school extracurricular participation. The following will describe several variations of these variables. Using the statistical method known as fit statistics the three forms of each variable will be tested to see which form explains the most variation within the model. The three forms are being considered because social and academic integration have been measured in a variety of ways through the literature on persistence in higher education and it is important to determine which form best explains the variability present among subjects. The competing forms of each measure will be compared based on their explanatory power, and the model that best explains the variation in graduation rates will be used.

Academic Integration

Academic integration is being measuring using formal and informal integration based on interactions with faculty members and peers. The formal integration measure is a scale ranging from 0 to 10; it provides the frequency at which students interact with faculty with 0 equaling never and 10 equaling always. The faculty interactions that students report are: raising their hand in class when they have questions, talking with the professor after class to ask a question, meeting with the professor in their office to talk about course material they do not understand, and meeting with the professor in their office talk about

issues not related to class. This scale variable is the average frequency of the four behaviors.

The informal academic variable is based on the frequency at which students report interacting with their peers regarding academic matters. The behaviors considered are studying with others, organizing a study group and seeking academic help from friends or classmates. The variable is also a scale based on a likert scale ranging from 0, never, to 10, always. The scale form of this variable indicates the frequency that students take part in the aforementioned academic activities with their peers.

High School Extracurricular Activities

High school extracurricular activities were measured using student report of how often they participated in a variety of activities both through school and out of school. This variable measuring activities participated though school is a scale variable that is a likert scale with 0 equaling never and 5 equaling always. The variable provides how often students participated in the following activities: school sports, drama, band, cheerleading, pep club and student government. A similar variable was calculated for an out of school activity measure. The activities accounting for this measure are as follows: out of school sport, private dance lessons, private art lessons, private music lessons, scout members, 4h and volunteering.

Importance of College

Students were asked to identify how their effort in college studies was affected by future plans such as going to graduate school or getting a job.

Students were asked to identify how important the need to get good grades to get in to graduate school was to their trying college studies. Additionally, they were asked how important the need to graduate from college to get a good job was in relation to their trying in college studies. These questions were responded to on a likert scale ranging from 0, no importance, to 10, utmost importance. The responses to these two questions were combined to provide a scale for the average importance of future plans on college studies.

Home Visits

Tinto's model includes external forces that are considered to decrease the ability of a student to integrate into the systems of a higher education institution. One such factor is frequent home visits; students who repeatedly make home visits may do so to connect with friends who are not attending college or may be too engaged in family matters which will not allow them to focus on school (1975). Students were asked to report the number of times they visited their parents during the fall semester. Students were also asked to report the total number of days they spent at home during these visits. Each variable was coded as a count for the students' actual response. A third variable was created to provide the average number of days a student spent home on each visit. This variable was created by dividing the total number days spent home by the number home visits. A dummy variable was created simply measuring if students reported home visits. Responses to the aforementioned questions that indicated a home visit were coded as 1, responses of no home visits or no days spent home were coded as 0.

Demographics

Demographic variables were created for the following measures gender, employment status, household income, and first generation status. Gender was created as a dummy variable from student report of sex; females were coded as 1 and males as 0. Employment status is also a dummy variable, students who report working during the school year were coded as 1, and students who did not work during the school year were coded as 0. Students were asked to report their household income during their senior year of high school. A dummy variable was created were students who reported household incomes of less than 20,000 were coded as 1. A household income between 20,000 and 49,999 were coded as 2. Reports of a household income greater than 50,000 were coded as 3. Students were considered to be first generation status if the reported that either of their parents had not attended any college and were coded as 1 on a dummy variable. Students reported that their parents attended some college or received a bachelor's degree or higher were coded as 0 on the same dummy variable.

College

Students were asked to report their current aspirations for school responses. Choices were: I plan to take college one year at a time and see how I do, I plan to graduate from college and then consider my options, and I plan to graduate from college and go to graduate or professional school. These three categories were broken down in to a dummy variable consisting of pacing college; get a bachelor's and going to graduate school. Given the differences in

graduation rates based on college type this was also considered an independent variable of public university, private university, and liberal arts college attendees.

Institution level data was collected on the percentage of students at each university attended that were European American; this variable was used to categorize colleges as PWIs and HBCUs. Students who this information was no available for were coded as unknown as its on category and were coded as missing. Thus two dummy variables were created, HBCU and PWI. College GPA was calculated using student report of number courses taken and grades received during their first year of college. Students reported their living arrangements for the school year. Students were coded as 1 for living on-campus if they stayed in an on-campus dorm, apartment or greek housing. Students were coded as 0 for off campus if the reported as living in an off-campus dorm, apartment or with family or relatives.

High School Academic Preparation

Students were asked to report how much course work they took in a list of subjects in high school response choices were 0-none, .5- a half a year, 1-one year, 1.5-a year, and a half and 2-two or more years. Eight categories were created based on course type: Math, Natural Science, history, social sciences, humanities, arts, and trades; these categories were the total course work taken for the courses that were in that area. The math category contained the following courses: Algebra, geometry, trigonometry, calculus, and general mathematics. The natural science category consisted of biology, chemistry, physics, earth science or geology, computer science and other or general sciences. United

States and World History were included in the history category. The social science category was made of government, politics, or civics, psychology, sociology, business and economics. Religious studies, philosophy, English and foreign language and literature courses were combined into the humanities category. The arts category consists of music, drama and art courses. The trades course were typing, computing, home economics, health, sex education, wood, metal and auto shop classes. High school GPA was calculated using student report of the grades the received in core courses: math, science, English, social science, and foreign language. Response choices were mostly A's, mostly B's, mostly C's, and mostly D's. Students' grades were calculating by using the number of courses reported and received a point value of 3.7, 2.7, 1.7 and 0.7 for their reported grades respectively. These values were totaled and divided by number course in each subject.

Chapter Summary:

This chapter explains the variables that are to be used in the study. It also provides background information as to how the data was collected and coded.

Chapter Three:

Analysis

Three types of statistical analysis will be used to test the research questions. The first, multinomial logistic regression (MLR) will be used to determine the likelihood that a subject will graduate in four years as opposed to six years or never graduating based on the values of their independent variables. MLR is the appropriate statistical methodology because the dependent variable of graduation is a categorical variable whose categories have no inherent numerical value or ranking.

The second type of statistical analysis that will be used is an ordinary least squares regression. Ordinary least square regression (OLS) is used to predict a value of the dependent variable based on the covariates. For this study, OLS will be used to examine the effects of independent variables such as gender on college grade point average during the first-year of college. OLS is the appropriate regression to use for predicted college GPA because as coded the college GPA variable is a continuous, or interval, variable.

The third dependent variable, social integration, will be examined using negative binomial regression (NBR). NBR is the appropriate type of regression model because the social integration dependent variable is truncated at zero and is a count variable. Thus, Ordinary least squares (OLS) regression is inappropriate because predictions below a zero value are invalid. Though Poisson models are often used for count outcomes, a preliminary analysis showed that NBR provides a significantly improved model fit over Poisson due to overdispersion of the

dependent variable. NBR accounts for the overdispersion by adding a parameter known as α that helps reflect any unobserved heterogeneity among the observations which occurs due to overdispersion.

Multinomial Logistic Regression

Table 2 presents the results of a multinomial logistic regression analysis used to determine the likelihood of a student graduating in four years compared to six years on the demographic, academics, high school courses, commitment, external forces and integration variables. Model 1, a baseline model, provides the likelihood of a female student graduating in four years compared to a male student; in this case females are an estimated 59% more likely to graduate in four years instead of six years, all else equal (p<.01). The covariates included in the models presented in table 2 have no impact on the effects of gender, which remain significant across models.

Model 2 adds covariates examining the effects of first generation status, household income, and HBCU attendance. This model allows for the examination of some pre-entry attributes included in Tinto's model for persistence. Surprisingly, students attending historically Black colleges and universities are an estimated 64% less likely to graduate in four years instead of six years, compared to students who attend predominately White institutions, holding all covariates constant (p<.001). Students who report a household income of less than 20,000 dollars have a decreased likelihood to graduate in four years instead of six years, compared to students who report a household income of 50,000 dollars or more, all else equal (rrr= .54; p<.01).

Table 3-2 Multinomial Logistic Regression of Likelihood of Graduating in Four-years as Opposed to Graduating in Six-years

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Female[1]	1.59(.26)**	1.77(.30)**	1.55(.27)*	1.67(.28)**	1.59(.27)**	1.77(.30)**	1.62(.28)**	1.77(.35)**
First Generation Status[2]		1.16(.38)						1.26(.46)
HBCU[3]		.36(.09)***						.38(.10)***
Household Income[4]								
<20,000		.54(.13)**						.64(.17)
20,000-49,000		.77(.14)						.85(.17)
Academics								
High School GPA			2.60(.62)***					2.30(.6)**
College GPA			1.61(.33)*					1.55(.35)
Declared Major[5]			1.14(.05)**					1.12(.05)*
High School Courses								
Trades				.97(.02)				.97(.02)
Performing Arts				.95(.03)				.98(.04)
Humanities				1.03(.05)				1.04(.06)
Social Science				.94(.04)				.96(.04)
History				1.17(.07)*				1.12(.08)
Science				1.09(.04)*				1.04(.04)
Math				.98(.04)				.98(.05)
Commitment								
Importance of college					1.03(.05)			1.05(.06)
Get Bachelor's[6]					1.08(.43)			.90(.43)
Graduate School[6]					1.29(.50)			1.10(51)
External Forces								
Employed[7]						1.09(.18)		1.01(.20)
Off-campus[8]						.31(.22)		.88(.72)
Number of visits home						.97(.01)*		.96(.02)*
Integration								
Peer Academic Integration							1.01(.04)	1.01(.04)
Faculty Academic Integration							1.02(.04)	1.09(.05)
College Social Integration							.96(.03)	.99(04)
High School Extracurricular Activities							.78(.09)*	.79(11)
Out of school Extracurricular Activities							.98(.19)	1.05(.25)
Pseudo R^2	.01	.04	.07	.04	.02	.02	.02	.13
LRX^2	22.52	69.42	125.69	77.49	42.76	36.67	40.27	213.93

[1]omitted category is male, [2]omitted category is non-first generation students
[3]omitted category is students attending Predominately White Institutions
[4]omitted category is household income greater than $50,000, [5]omitted category is undeclared major
[6]omitted category is wants to take college one year at a time
[7]omitted category is unemployed during school year , [8]omitted category is living on campus
Standard errors presented in parenthesis *p<.05 **p<.01 ***p<.001

Inconsistent with current literature on persistence in higher education, first generation status has no effect on graduating in four years compared to six years. Additionally, a household income between 20,000 and 49,999 dollars has no effect on graduating in four years compared to six years.

Model 3 adds covariates measuring the effects of declaring a major, high school GPA and college GPA. This model begins to explore the effects of academic variables on graduating in four years compared to graduating in six years. Consistent with previous research, a one-unit increase in high school GPA, on average, increases the likelihood of graduating in four years instead of six years by a factor of 2.60, holding all other covariates equal ($p<.001$). On average, a one-unit increase in first-year college GPA is also found to significantly increase the likelihood of graduating in four years compared to six years (rrr=1.61, $p<.05$), holding all covariates constant. Declaring a major during the fall of freshman year, on average, is associated with an estimated 14% increase in the likelihood of graduating in four years compared to six years, all else equal ($p<.01$).

The covariates, added to model 4, measure the effects high school academic preparation on graduating in four years compared to graduating in six years. This model provides a more in depth examination high school academic preparation beyond high school GPA by exploring the effects of the exact courses taken on future college success. This model reveals two high school course groups that significantly increase the likelihood of graduating in four years as opposed to six years. On average, a half-year increase in the number history courses taken in high school is associated with a

17% estimated increased likelihood of graduating four years as opposed to graduating in six-years, all else constant (p<.05). Similarly, a half-year increase in the number science courses taken in high school, on average, is associated with a 9% estimated increased likelihood of graduating four years as opposed to graduating in six years, all else constant (p<.05). No other high school course groups had a significant effect in the model.

Model 5 adds covariates intended to measure a student's commitment to attaining a college degree. Commitment to college is an important aspect of Tinto's integrationist model in that it can subsequently affect a student's integration level in to both the academic and social systems of an institution. The covariates of aspirations and importance of college for future goals, such as getting a job or going to graduate school, have no significant effect on graduating in four years as compared to graduating in six years.

External forces such as being employed during the school year, living off campus, and visiting home are considered influential to a student's ability to integrate into the academic and social systems of a higher education institution, according to Tinto's model. Their effect on graduating in four years compared to six years is measured in model 6. Consistent with Tinto's theoretical assertions, a one-unit increase in the number of visits a student makes home, on average, is associated with an estimated decrease of 3% in the likelihood of graduating in four years instead of 6 years, holding all covariates constant (p<.05). Neither being employed during the school

year nor living off campus had a significant effect on graduating in four years instead of six years.

The covariates in Model 7 measure the effects of student integration on graduating in four years as compared to six years. Contrary to the study's expectations, on average, a one-unit increase on a scale measuring the level of high school extracurricular activity participation is associated with an estimated decrease of 22% in the likelihood of graduating in four years instead of six years, holding all covariates constant (p<.05). No other covariate in the model had a significant impact on graduating in four years instead of six years. The effects of both college academic and social integration measures, which were not significant, are divergent from the theoretical assertions of Tinto's model.

The final model presented in table 2 model 8 combines all the covariates from previous models to explore the complete effects of Tinto's model on gender effects of graduating in four years compared to graduating in six years. It appears that even with all of the covariates in the model the effects of gender still result in a significant increase in the likelihood of graduating in four years as compared to graduating in six years (rrr=1.77, p<.01), holding all covariates constant. Attending a HBCU also continues to decrease the likelihood of graduating in four years as compared to graduating in six years (rrr=.38, p<.001). High school GPA continues to have a significant effect on increasing the likelihood of graduating in four years as compared to graduating in six years (rrr=2.30, p<.01), as does declaring a major during the fall of freshmen year (rrr=1.12, p<.05), all else equal. A one-unit increase in the number of visits a student

makes home, on average, is associated with an estimated 4% decrease in the likelihood of graduating in four years as compared to graduating six years, all else equal (p<.05). Covariates that in previous models had a significant effect on graduating in four years as opposed to six years such, as the number of history and science courses taken in high school and participation in high school extracurricular activities, no longer have a significant effect in the final model.

Table 3 presents the results of the multinomial logistic regression analysis on graduating in four years as compared to never graduating using the same covariates as table 2. Again, model 1 is used as a baseline model. In this model females again are significantly more likely to graduate in four years as compared to never graduating (rrr=2.07, p<.001), compared to their male counterparts. As with the covariates in the multinomial logistic regression presented in table 2, the covariates in these models had no impact on the robust effects of gender on graduating in four years as opposed to graduating in six years.

Model 2 adds the covariates measuring first generation status, HBCU attendance, and household income. Consistent with previous research, in this model first generation status significantly decreases the likelihood of graduating in four years as compared to never graduating by an estimated 43%, all else constant (p<.05). Attending a HBCU, on average, is associated with an estimated 71% decrease in the likelihood of graduating in four years as compared to never graduating, compared to students who attend PWIs, all else equal (p<.001). Household income has no significant effect in this model.

Table 3-3 Multinomial Logistic Regression of Likelihood of Graduating in Four-years as Opposed to Never Graduating

Variable[1]	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Female[1]	2.07(.34)***	2.12(.37)***	1.93(.35)***	2.18(.37)***	2.13(.36)***	2.24(.38)***	2.11(.40)***	2.02(.44)**
First Generation Status[2]		.57(.16)*						.82(.28)
HBCU[3]		.29(.07)***						.27(.08)***
Household Income[4]								
<20,000		.68(.17)						.85(.26)
20,000-49,000		.86(.16)						.88(.20)
Academics								
High School GPA			3.60(.88)***					3.15(.87)***
College GPA			2.95(.59)***					3.02(.68)***
Declared Major[5]			1.13(.05)**					1.10(.06)
High School Courses								
Trades				.96(.02)				.98(.02)
Performing Arts				.97(.02)**				.95(.04)
Humanities				1.10(.07)*				1.18(.08)*
Social Science				.95(.04)				.95(.04)
History				1.23(.08)**				1.26(.10)**
Science				1.03(.03)*				.96(.04)
Math				.90(.05)**				.91(.05)
Commitment								
Importance of college					1.10(.05)*			1.10(.06)
Get Bachelor's[6]					3.03(1.06)**			2.56(1.12)*
Graduate School[6]					2.37(.78)**			1.98(82)
External Forces								
Employed[7]						.95(.17)		.82(.17)
Off-campus[8]						.27(.19)		.71(.61)
Number of visits home						.97(.01)*		.96(.02)*
Integration								
Peer Academic Integration							1.06(.04)	1.07(.05)
Faculty Academic Integration							1.02(.04)	1.05(.06)
College Social Integration							.96(.03)	.92(.15)
High School Extracurricular Activities							.94(.12)	.72(.18)
Out of school Extracurricular Activities							.64(.13)*	.99(.04)
Pseudo R^2	.01	.04	.07	.04	.02	.02	.02	.13
LRX^2	22.52	69.42	125.69	77.49	42.76	36.67	40.27	213.93

[1]omitted category is male
[2]omitted category is non-first generation students
[3]omitted category is students attending Predominately White Institutions
[4]omitted category is household income greater than $50,000
[5]omitted category is undeclared major
[6]omitted category is wants to take college one year at a time
[7]omitted category is unemployed during school year
[8]omitted category is living on campus
Standard errors presented in parenthesis *p<.05 **p<.01 ***p<.001

Model 3 again presents covariates measuring academic variables related to high school and college experiences. In agreement with previous research and Tinto's theoretical assertions, a one-unit increase in high school GPA, on average, increases the likelihood of graduating in four years as compared to never graduating by a factor of 3.60, holding all covariates constant (p<.001). Additionally, a one-unit increase in first-year college GPA, on average, increases the likelihood of graduating in four years as opposed to never graduating by a factor of 2.95, all else equal (p<.001). Students who declare a major during the fall of freshmen year are significantly more likely to graduate in four years as opposed to never graduating (rrr=1.13, p<.01), compared to students who do not declare a major, holding all covariates constant.

Model 4 adds covariates measuring high school academic preparation through courses taken. Performing arts courses become significant in this model, such that a half-year increase in the number performing arts classes taken during high school significantly decrease the likelihood of graduating in four years as compared to never graduating (rrr=.97, p<.01). A half-year increase in the number of math courses taken during high school is also associated with a significant decrease in the likelihood of graduating in four years as opposed to never graduating (rrr=.90, p<.01). Several high school course groups increase the likelihood of graduating in four years as opposed to never graduating. A half-year increase in the number of humanities courses taken in high school, on average, is associated with an estimated increase of 10% in the likelihood of graduating in four years as opposed to never graduating (p<.05). A half-year

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increase in the number of history courses taken in high school, on average, is associated with an estimated increase of 23% in the likelihood of graduating in four years as opposed to never graduating (p<.01). Additionally half-year increase in the number of science courses taken in high school, on average, is associated with an estimated increase of 3% in the likelihood of graduating in four years as opposed to never graduating (p<.05). Neither trades course nor social science courses have a significant effect in the model. This model supports the theoretical assertions that pre-entry academic preparation is an important factor in student persistence in higher education.

Model 5 adds covariates measuring student commitment to attaining a college degree. In contrast to the comparison with six year graduation, in which the covariates had no significant effect; in this model the variables measuring commitment significantly increase the likelihood of graduating in four years as compared to never graduating. A one-unit increase on a scale measuring the level at which students rate the importance of college for future goals, such as getting a job or going to graduate school, on average, increases the likelihood of graduating in four years as opposed to never graduating by 10%, all else equal (p<.05). In addition, students who aspire to get their bachelor's degree are three times more likely to graduate in four years instead of never graduating, compared to students who want to pace college one year at a time, holding all covariates constant, (p<.01). Similarly, aspiring to go to graduate school increases the likelihood of graduating in four years as opposed to never graduating by a factor

of 2.37, compared to students who want to pace college, all else equal (p<.01). The results in this model are more consistent with previous research.

Model 6 adds covariates measuring the effects of external forces on student persistence in higher education. Being employed during the school year has no significant effect on whether or not a student will graduate in four years as opposed to never graduating, neither does living off campus. A one-unit increase in the number of visits a student makes home, however, does significantly decrease the likelihood of graduating in four years as opposed to never graduating (rrr=.97, p<.05).

The covariates in model 7 are intended to measure one of the central tenets of Tinto's integrationist model, in addition to one of this study's primary research questions. Contrary to theoretical model proposed by Tinto, the college integration variables of peer academic integration, faculty academic integration and college social integration have no significant effect on the likelihood of graduating in four years as opposed to never graduating. High school extracurricular participation also has no significant effect, however, a one-unit increase on a scale measuring the level of extracurricular activity participation outside of (external from) high school, on average, is associated with an estimated decrease of 46% in the likelihood of graduating in four years compared to never graduating, all else equal (p<.05).

Model 8 combines all the covariates from previous models to explore the complete effects of Tinto's model on gender effects of graduating in four years compared to never graduating; this model is presented in table 3. The covariates

in the model fail to have an impact on the effects of gender, which are robust and significant across all models. In this model females are twice as likely to graduate in four years instead of to never graduating, compared to males, all else constant, (p<.01). As in model 2, measuring the effects of background factors on graduation rates, attending a HBCU continues to significantly decrease the likelihood of graduating in four years as opposed to never graduating (rrr=.27, p<.001), compared to students who attend PWIs, all else constant. A one-unit increase in high school GPA , on average, increases the likelihood of graduating in four years as compared to never graduating by a factor of 3.15, all else constant (p<.001). A one-unit increase in first-year college GPA similarly increases the likelihood of graduating in four years as opposed to never graduating by a factor of 3.02, holding all covariates constant (p<.001). Among the course groups taken in high school, two variables continue to have a significant effect on the likelihood of graduating in four years as opposed to never graduating. A half-year increase in the number of humanities courses taken during high school is associated with an estimated increase of 18% in the likelihood of graduating in four years as opposed to never graduating, all else equal (p<.05). Additionally, A half-year increase in the number of history courses taken during high school is associated with an estimated increase of 26% in the likelihood of graduating in four years as opposed to never graduating, all else equal (p<.01). Students who aspire to get a bachelor's degree are 2.5 times more likely to graduate in four years as opposed to never graduating, compared to students who wish to take college one year at time, all else constant (p<.05). The

number of times a student visits home significantly decreases the predicted

likelihood of graduating in four years as opposed to never graduating (rrr=.96,

p<.05). No other covariates have an effect on graduating in four years instead of

never graduating.

Ordinary Least Squares Regression

Table 4 presents the results of an ordinary least squares regression

intended to measure the effects of the covariates on first-year college GPA[2] as a

measure of academic integration. Model 1 is used as a baseline for the effects of

gender in which females have a college GPA that is an estimated .08 points

higher than the college GPA of males, all else constant (p<.05). The effects of

gender on first-year college GPA are robust such that few covariates have a

significant impact on gender's effect. The covariates that have a significant

impact on gender are discussed below in their appropriate models.

Model 2 considers background variables such as first generation status,

HBCU attendance, and household income as factors that could have an effect on

college GPA. Consistent with previous research first generation students have a

college GPA, on average, that is .19 points lower than non-first generation

students, all else equal (p<.01).

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[2] First year college GPA is referred to as college GPA for the duration of the OLS results section.

Table 3-4 Ordinary Least Squares Regression Predicting First Year College GPA

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Female[1]	.08(.03)*	.07(.03)*	.03(.03)	.07(.03)*	.07(.03)*	.08(.03)**	.06(.03)	-.00(.03)
First Generation Status[2]		-.19(.06)**						-.16(.06)
HBCU[3]		.13(.04)**						.17(.06)**
Household Income[4]								
<20,000		-.02(.05)						.01
20,000-49,000		-.04(.03)						-.04(.03)
Academics								
High School GPA			.40(.04)***					.34(.04)***
Declared Major[5]			.01(.01)					.02(.01)*
High School Courses								
Trades				-.01(.00)*				-.01(.00)
Performing Arts				.01(.00)				.01(.01)
Humanities				.01(.01)				.01
Social Science				.00(.01)				-.01(.01)
History				.03(.01)*				.02(.01)
Science				.01(.01)**				.01
Math				-.02(.05)**				-.00(.01)
Commitment								
Importance of college					-.01(.01)			-.00(.01)
Get Bachelor's[6]					.07(.07)			.02(.07)
Graduate School[6]					.18(.07)**			.11(.07)
External Forces								
Employed[7]						.01(.03)		.01(.03)
Off-campus[8]						.08(.13)		-.08(14)
Number of visits home						-.01(.00)***		-.01(.00)**
Integration								
Peer Academic Integration							-.02(.01)**	-.02(.01)**
Faculty Academic Integration							.02(.01)**	.03(.01)**
College Social Integration							-.01(.01)*	-.00(.01)
High School Extracurricular Activities							.04(.02)	.03(.02)
Out of school Extracurricular Activities							-.02(.04)	- .04(.20)
Adjusted R^2	.01	.02	.11	.03	.02	.02	.02	.02
F	6.72	5.42	37.79	4.24	5.27	5.37	5.37	5.05

[1]omitted category is male
[2]omitted category is non-first generation students
[3]omitted category is students attending Predominately White Institutions
[4]omitted category is household income greater than $50,000
[5]omitted category is undeclared major
[6]omitted category is wants to take college one year at a time
[7]omitted category is unemployed during school year
[8]omitted category is living on campus
Standard errors presented in parenthesis
*p<.05 **p<.01 ***p<.001

Students who attend HBCUs have a college GPA that, on average, is an estimated .13 points higher than students attending PWIs, all else constant (p<.01). The household income variables had no significant effect on college GPA.

The effects of academic covariates such as high school GPA and declaring a major are examined in model 3. The covariates in model 3 have a significant impact on reducing the effect of gender on college GPA, in that in this model gender no longer has a significant effect on the dependent variable. As with gender, declaring a major during the fall of freshmen year has no significant effect on college GPA. A one-unit increase in high school GPA, on average, is associated with an estimated increase in college GPA of.40 points, all else equal (p<.001).

Model 4 covariates measure the effects of high school course preparation on college GPA. Four high school course groups are found to have a significant effect on college GPA. A half-year increase in the number of trade courses has a significant effect on college GPA (b=-.01, p<.05), all else equal. On average, a half-year increase in the number of math courses taken in high school is associated with an estimated .02 decrease in college GPA, holding all covariates constant (p<.01). Additionally, On average, a half-year increase in the number of history courses taken in high school is associated with an estimated .03 increase in college GPA, holding all covariates constant (p<.05). On average, a half-year increase in the number of science courses taken in high school is associated

with an estimated .01 increase in college GPA, holding all covariates constant (p<.01).

Covariates measuring commitment to earning a college degree are measured in model 5 for their effects on college GPA. Students who intend on going to graduate school have a college GPA that is an estimated 18 points higher than students who plan to take college one year at a time, all else equal (p<.01). Neither importance of college for future goals nor intentions to receive a bachelor's degree have a significant effect on college GPA.

Model 6 adds covariates measuring the effects of external forces on college GPA. A one-unit increase in the number of visits a student made home, on average, is associated with an estimated decrease of .01 in college GPA, all else constant (p<.001). No other covariates in the model had a significant effect on college GPA.

Model 7 again measures the effects of college integration variables and high school participation in extracurricular activities. The covariates in this model have a significant impact on gender effects. In this model gender is no longer significant. A one-unit increase on a scale measuring the level of peer academic integration, on average, is associated with an estimated decrease of .02 in college GPA, holding all covariates constant (p<.01). Conversely, a one-unit increase on a scale measuring the level of faculty academic integration, on average, is associated with an estimated increase of .02 in college GPA, holding all covariates constant (p<.01). Additionally, a one-unit increase in the average number of hours a student spends a week participating in college social

integration activities, is associated with an estimated decrease of .01 in college

GPA (p<.05). No other covariates were significant in the model.

In the last model presented in table 4, all of the covariates are combined

to explore their effects on college GPA. The combined model, similar to model 3

and 7, has a significant impact on the effects of gender, which become non-

significant in the final model. Many of the covariates that were significant in the

individual models continue to be significant in the final model. Students attending

HBCUs have a college GPA that is .17 points higher than students attending

PWIs, all else constant (p<.01). High school GPA continues to have a significant

effect on college GPA (b=.34, p<.001). Declaring a major during the fall of

freshmen year, which was not previously significant, has a significant effect on

college GPA in the final mode (b=.02, p<.05). An increase in the number of home

visits continues to negatively affect college GPA (b=-.01, p<.01). Peer academic

integration continues to have a significant negative effect on college GPA (b=-

.02, p<.01). Additionally, faculty academic integration continues to have a

significant effect on college GPA (b=.03, p<.01).

Negative Binomial Regression

Table 5 presents the results of a negative binomial regression ran to

explore the effects of the covariates on student participation in college social

integration activities[3]. The baseline model suggests that being female

significantly decrease the average number of hours a student spends a week

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[3] College Social Integration is measured by the average number of hours a week
a student spends participating in extracurricular activities, playing or practicing
sports, attending sporting events, attending parties, and socializing with friends.

participating in college social integration activities (irr=.76, p<.001). The effects of gender were consistent and robust throughout the models presented in table 5; the covariates had no impact on the effects of gender. Model 2 adds the covariates measuring student background characteristics. The covariates in this model have no significant impact on the effects of gender. Gender was the only variable that was significant in the model.

Model 3 includes variables measuring academic factors and their effect on student college social integration. An additional unit increase in high school GPA significantly decreases the expected average number of hours spent a week participating in college social integration activities (irr= .84, p<.001), all else equal. No other covariate has a significant impact on college social integration.

Table 3-5 Negative Binomial Regression for Likelihood of Having an Additional Hour Participated in Social Integration Activities

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Female[1]	.76(.03)***	.75(.03)***	.78(.03)***	.76(.03)***	.76(.03)***	.77(.03)***	.75(.03)***	.78(.02)***
First Generation Status[2]		1.00(.06)						1.03(.07)
HBCU[3]		1.08(.05)						1.00(.05)
Household Income[4]								
<20,000		.97(.05)						.97(.05)
20,000-49,000		.99(.04)						1.04(.04)
Academics								
High School GPA			.84(.04)***					.87(.04)
College GPA			.98(.04)					.99(.04)
Declared Major[5]			.99(.01)					1.02(.01)
High School Courses								
Trades				1.01(.00)**				1.01(.00)*
Performing Arts				1.00(.00)				.99(.01)
Humanities				1.02(.01)				1.02(.01)
Social Science				1.00(.01)				1.00(.01)
History				1.01(.01)				1.02(.01)
Science				.99(.01)*				.99(.01)
Math				1.02(.01)*				1.02(.01)
Commitment								
Importance of college					.98(.01)*			.97(.01)**
Get Bachelor's[6]					.94(.07)			.97(.08)
Graduate School[6]					1.01(.07)			1.07(.09)
External Forces								
Employed[7]						.84(.03)***		.84(.03)***
Off-campus[8]						1.16(.13)		1.20(.15)
Number of visits home						1.00(.00)		1.00(.00)
Integration								
Peer Academic Integration							1.00(.01)	1.01(.01)
Faculty Academic Integration							1.00(.01)	1.00(.01)
High School Extracurricular Activities							1.01(.03)	1.03(.03)
Out of school Extracurricular Activities							1.10(.04)*	1.08(.05)
Pseudo R²	.01	.01	.02	.02	.02	.02	.02	.03
LRX²	62.67	63.38	73.65	83.54	70.11	89.48	71.84	123.89

[1]omitted category is male
[2]omitted category is non-first generation students
[3]omitted category is students attending Predominately White Institutions
[4]omitted category is household income greater than $50,000
[5]omitted category is undeclared major
[6]omitted category is wants to take college one year at a time
[7]omitted category is unemployed during school year
[8]omitted category is living on campus
Standard errors presented in parenthesis *p<.05 **p<.01 ***p<.001

Model 4 adds covariates measuring high school academic preparation. A half-year increase in the number of trades courses taken in high school significantly increases the expected average number of hours spent a week participating in college social integration activities (irr= 1.01, p<.01), holding all covariates constant. Likewise, a half-year increase in the number of math courses taken in high school significantly increases the expected average number of hours spent a week participating in college social integration activities, holding all covariates constant (irr=1.02, p<.05). The number of science course taken during high significantly decreases the average number of hours spent a week participating in college social integration activities (irr=.99, p<.05), all else equal. No other high school course groups had a significant effect on the average number of social integration activities.

The covariates in model 5 are intended to measure the effects of commitment to college on the average number of hours a student spends a week participating in college integration activities. Commitment to college is thought to increase student integration into both the academic and social systems of an institution. However, a one-unit increase on a scale measuring the level of college importance to a student's future goals decreases the average number of expected hours a student spends a week participating in college social integration activities (irr=.98, p<.05), all else equal. Neither a student's aspirations to get a bachelor's degree nor to go to graduate school had any effect on the dependent variable.

Model 6 adds covariates measuring the effect of external forces, which in Tinto's model are thought to decrease the extent of both academic and social integration. The only external forces variable that had an effect on the average number of hours per week a student spent participating in extracurricular activities is employment during the school, (irr=.84, p<.001); this finding is consistent with the theoretical assertions of Tinto.

Model 7 adds covariates measuring academic integration and the effects of high school extracurricular participation. A one-unit increase in a scale measuring the level of student participation in extracurricular activities outside of high school is associated with a significant increase in the expected average number of hours spent a week participating in college social integration activities, all else equal (irr= 1.10, p<.05). None of the other covariates in the model had a significant effect on the dependent variable.

Model 8 combines on the previous covariates to explore their combined effect on the average number of hours spent participating in college social integration activities. In the final model the number of trades courses continues to significantly affect the average number of hours spent a week participating in college social integration activities (irr=1.01, p<.05). An increase on a scale measuring the level of college's importance on future goals is associated with a significant decrease of the dependent variable (irr=.97, p<.01). Again, consistent with Tinto's model being employed during the school year significantly decreases the level of college social integration (irr=.84, p<.001).

Figure 3-1 Predicted Probabilities for Graduation
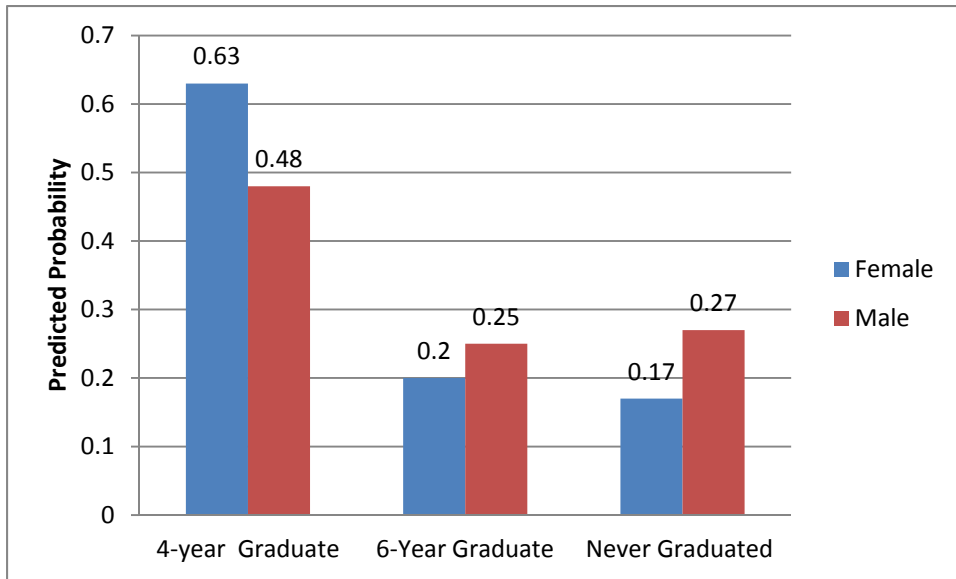
Predicted Probabilities

In order to understand the effects of the independent variables on graduation rates, the predicted probability of each gender group needs to be examined across outcomes. As shown in figure 1, it is clear that females have an estimated 63% predicted probability to graduate in four years, which is 15% higher than the predicted probability for male students. This is in stark contrast to the predicted probabilities of graduating in six years or never graduating. Females have an estimated predicted probability of 20% to graduate in six year years compared to males' probability of 25%. While, males have a predicted probability of 27% of never graduating compare to females 17% predicted probability. It is clear from the baseline predicted probabilities that females are much more likely to graduate in four years than to never graduate or to complete their degrees in six years. Male students are almost equally as likely to never graduate as they are to graduate in six years.

It is also important to view the baseline predicted probability for college GPA for both male and female students. The estimated first-year college GPA for males is 3.06, females estimated first-year college GPA is .08 points higher at 3.14. Reviewing table 4 reveals the effect of each independent variable on the estimated baseline GPAs.

Predicted probabilities were also calculated to examine the likelihood of a student having spent a given number of hours a week participating in college social integration activities. As shown in figure 2 it is clear that female students are more likely to spend fewer hours a week participating in social integration activities. Figure 3 reveals how male students are more likely to spend a higher average number of hours a week participating in social integration activities. Female students also have a sharp decline in the average number of hours spent once their participation levels reach 7 or more hours a week; male students do not face as sharp a decline.

Chapter Summary:

Chapter three presents the results of the statistical analyses performed to examine this study's research questions. The results are summations of the tables and figures presented.

Figure3- 2 Predicted Probability for Number of Hours Spent a Week participating in College Social Integration Activities for Women
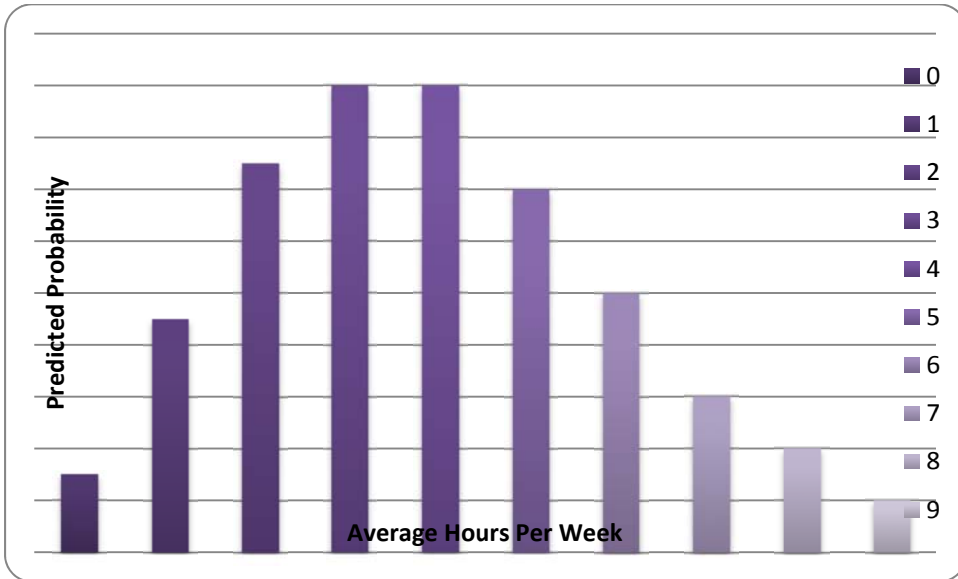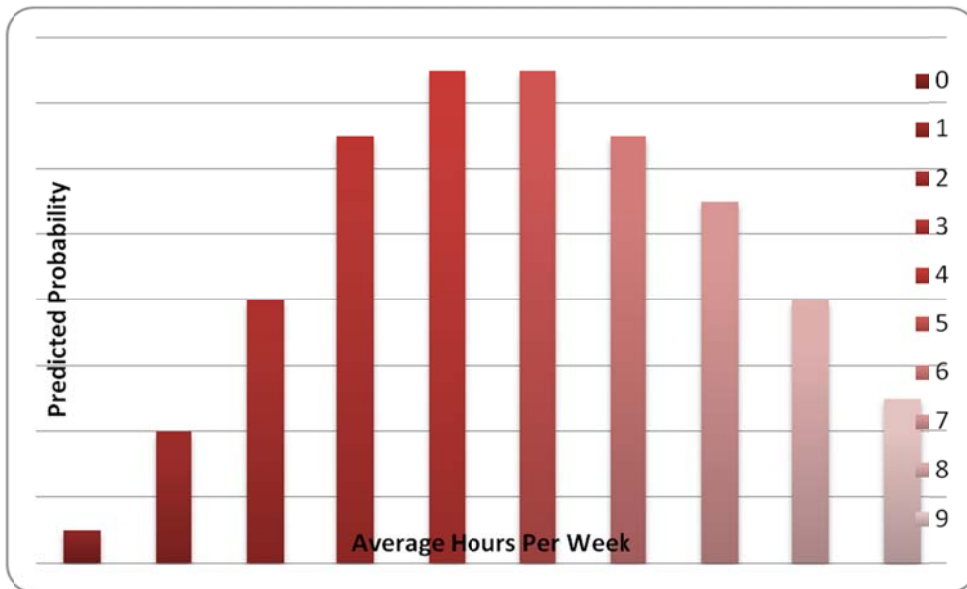

Figure 3-3 Predicted Probability for Number of Hours Spent a Week participating in College Social Integration Activities for Men

Chapter Four:

Discussion

Persistence in Higher Education

Tinto's Integrationist model for student persistence in higher education is the most prominent model used for studying student persistence. This research supports many of the theoretical assertions made by Tinto; at least one variable in each model had a significant effect on persistence in higher education. The dependent variable used to measure persistence was a categorical variable identifying whether a student graduated in four years, six years, or never graduated. Persistence is defined as a student continuing to attend a higher education institution year to year until graduation, which is typically expected to be within four years. However, in 1990 the United States government passed the Student Right to Know Act requiring institutions receiving federal funds to provide data on the percentage of students who graduate within 150% of normal time to complete a degree, with this the six year graduate rate measure become the standard for national data collection (NCES). Using this definition and general expectations, the likelihood of graduating in four years was compared to the likelihood of graduating in six years or never graduating. This comparison although definitionally different from Tinto's original definition still provides important information regarding student persistence. Additionally, the use of graduation rates as a measure of persistence has been used in other studies to help deal with the sporadic way in which student attrition can occur (Ishitani 2005).

In Tinto's model, variables related to student commitment to higher education, external forces, and student integration into both the social and academic systems are central to student persistence. The results of this study reveal that these factors are not all important in predicting student persistence among African American students. These factors have differing effects on the categories of the dependent variable. Student commitment to higher education does not have an effect on whether or not a student will graduate in four years relative to six years. However, all three of the variables measuring this concept had a significant effect on whether or not a student graduated in four years versus never graduating. Considering that never graduating would be the truest measure of a lack of persistence, the fact that these variables had a great impact on increasing a student's likelihood of graduating in four years as opposed to never graduating would be consistent with Tinto's assertions. Their lack of effect on four year graduation compared to six year graduation reveals that these students may be equally committed to the purpose of higher education or that other factors have a more significant impact on persistence among students who complete their degrees.

External forces are factors that are not a part of a higher education institution that result in a student being less involved or active in the institution. These factors include student employment, living off campus and home visits. Home visits are considered to limit student involvement because they may be too involved in activities unrelated to college. For instance students could make continued trips home to visit friends or may be too involved in family related

issues that could cause stress. This could lead students to feel as if they are not a part of the university or that they belong elsewhere. Living off campus and being employed are also considered to limit student involvement according to Tinto's model. Of the external forces variables, only home visits had a significant effect on whether a student would graduate in four years as compared to graduating in six years or never graduating. The effect of this variable was consistent with Tinto's model in that it decreased the rate at which students graduated in four years. Tinto refers to these variables as external communities considering them to affect student persistence when the community has a culture that is not in line with the goals of higher education which could pull students away from higher education (1975). Also students who continue to try being a part of both the external community and the institution's community, according to Tinto, are at risk for role conflict. The lack of effect of the employment and living arrangement variables may be due to the lack of variation among these variables within the sample; 63% of the students report being employed during the school year and 92% of the students report living on campus. Given that the living arrangement variable was collected in the first-year of college when most entering students live on campus, which is required by some institutions, this factor may have a more significant influence as students continue on in their education.

Student integration is a central part of Tinto's model and it was expected to have a significant effect on student persistence. However, none of the three variables measuring student integration as outlined by Tinto had a direct effect

on student persistence. These factors may have an indirect effect on persistence based on their effects on college GPA. These indirect effects will be discussed shortly. The absence of a direct effect of college integration variables on persistence was not completely unexpected with the solely African American population used in the this study, especially considering the previous research that indicates that African American students usually felt isolated at PWIs of which 87% of the students attended.

Many of the covariates that had the strongest direct impact on persistence were background variables and academic preparation. Students who attended a HBCU were more likely to graduate in six years or never graduate compared to students who attended a PWI. This seems inconsistent with previous research that discusses the social and academic benefits associated with attending a HBCU (Feagin et al 1996; Winkle-Wagner 2009; Davis 1994.). Previous research has identified first generation status as a factor that affects student persistence. Somewhat consistent with these findings, first generation students were more likely to never graduate than they were to graduate in four years; however, unlike the previous research, first generation status did not have a significant effect on whether or not a student graduated in four years as compared to graduating in six years (Ishitani 2005).

The last demographic variable that had an effect on persistence was household income. Household income which was coded as a categorical variable placing students reported household income in categories of less than 20,000 dollars, between 20,000 and 49,999 dollars, and more than 50,000 dollars.

Students who reported a household income of less than 20,000 dollars were less likely to graduate in four years than they were to graduate in six years, compared to students who reported a household income of more than 50,000 dollars. Past research has found household income to have a significant effect on persistence (Broadridge and Swanson 2005). However, this research finds that only the poorest students are affected by household income and it only reduces their chance of graduating in four years, not of ever graduating. Student finances are still an important topic of study, however, and more work needs to be done to incorporate more factors related to finances to explore their effects on student persistence.

Overall, variables related to academic preparation had the greatest impact, outside of gender, on persistence. High school GPA significantly increased the likelihood of graduating in four years. This effect is consistent with past research and continues to support the importance of academic preparation on college success (Fisher 2007; Conger and Long 2010). The primary and secondary educational experiences of today's students are distinct for students based on such characteristics as race, gender, socioeconomic status, and place. The disparities in educational quality have been found to have an adverse effect on educational attainment (Jacobson and Mokher 2009; Wyner et al 2007). First-year college GPA had a significant effect on student persistence, which was consistent with previous research (Fisher 2007). According to Tinto's model, students who are successful at integrating in to the academic system of a higher education institution should be academically successful (1975). Likewise this

successful integration will lead to student persistence. The effects of first-year college GPA, however, are mediated by several other variables within the model which was first evident by its lack of effect in the final model containing all of the previous models' covariates. Given the longitudinal nature of Tinto's model, these mediating effects were expected and their direct effect on first-year college GPA was examined using an OLS regression with the first-year college GPA as a dependent variable. The results of this regression will be discussed below.

Declaring a major during the fall of freshmen year increases the likelihood of graduating in four years. Several assumptions can be made based on these findings and previous research (Conger and Long 2010). College majors have often been examined because of the gendered patterns reflected in who chooses what major and ultimately what occupation. Research focusing on such topics reflects the majority of research concerning the effects of college major. Recently, Conger and Long (2010) examined factors that contributed to the growing gender gap in educational attainment. Finding in part that the male students in the study often choose majors such as business, engineering, computer science, and physical and biological sciences, in which students earned fewer cumulative hours every semester and had lower GPAs. This study adds a new dimension to the discussion of college majors. Although race-gendered patterns in major choice have an adverse effect on occupational outcomes, it appears that simply choosing a major helps to increase college persistence; the choice of a major may provide students with more structure for their academic pursuits.

As expected, an in-depth examination of academic preparation through the use of high school course groups provides some significant factors that affect college persistence. Increases in the number of history and sciences courses taken during high school increase the likelihood of graduating in four years as opposed to graduating in six years or never graduating. Additionally, an increase in humanities courses increases the likelihood of graduating in four years as opposed to never graduating. Conversely, additional courses in math and performing arts decrease the likelihood of graduating in four years as compared to never graduating. These measures are important considering the differences that have been observed in gendered patterns in high school (Downey and Yuan 2005; Conger and Long 2010).

First-year College GPA

The second regression was an OLS using first-year college GPA as a dependent variable. The OLS regression allowed for the examination of the effect of factors in Tinto's model on college GPA. Being a first generation college student was associated with a decrease in college GPA compared to non-first generation students. This was an expected finding as first generation students are likely to have less knowledge of the college system and unrealistic expectations about the rigors of college academics. First generation students are also more likely to take remedial courses (NCES 1998). Conversely, their non-first generation peers have their experienced parents or in some cases siblings to advise them on the academic requirements of higher education. Students attending a HBCU had a college GPA that was significantly higher than students

attending a PWI; this is consistent with previous research. As mentioned earlier, students attending a HBCU were less likely to graduate in four years compared to students attending a PWI. Considering the effect that college GPA has on persistence, HBCU attendance may mediate this effect.

Similar to their effects on student persistence, academic preparation variables also had a significant effect on college GPA. Increases in high school GPA were associated with a significant increase in first-year college GPA. This finding is consistent with previous research and continues to support the connection between high school academics and college success. Again, declaring a major during the fall of freshmen year significantly increases first-year college GPA compared to students who do not declare a major. The continued effects of this variable support the need for further research regarding the act of choosing a major regardless of the major chosen. High school courses such as history and science are associated with increases in college GPA. Conversely, increases in trades and math courses are associated with a decrease in college GPA.

Several variables measuring commitment, external forces and integration have a significant effect on college GPA. Students who want to attend graduate school have significantly higher first-year college GPAs than students who want to pace college one year at a time. This level of commitment may work similar to first generation status in that aspiring to attend graduate school requires some knowledge of the structure of higher education. Students who aspire to attend graduate school may work harder in their courses out of recognition of the

importance of college GPA and good study habits on admission and success in graduate school. The effects of this variable are particularly important given the gender differences in the number of graduate degrees earned, as females continue to earn more graduate degrees than men. Increases in the number of visits a student makes home during the fall of freshmen year continue to have negative effects on the students college experiences. As with student persistence, home visits may divert students' focus from their academic pursuits.

Integration into both the social and academic systems of a university is a central part of Tinto's theory. Unlike with the previous regression predicting college persistence, the three integration variables had significant effects on College GPA. An increase on a scale measuring the level of faculty integration is associated with an increase in college GPA. This is consistent with previous research and Tinto's theory. In contrast, an increase on a scale measuring the level of peer academic integration and an increase on scale measuring the level of college social integration are associated with a decrease in college GPA. This result may be due in part to African American students' social networks, which by some accounts are predominately other African American students (Feagin et al 1996; Winkle-Wagner 2009). The weakness in these social networks, from an academic perspective, is that African American students tend to have lower GPAs compared to European American, Hispanic American and Asian American students; thus, their study groups might not be as academically beneficial as a mixed group. As previously mentioned, these integration variables had no effect

on student persistence, but their effects on college GPA may be a sign that they have an indirect effect on college persistence.

College Social Integration

Lastly a negative binomial regression was used to examine the expected number of hours a student spends participating in social integration activities. The regression reveals some factors that contribute to participation in student integration activities. An increase in high GPA is associated with a decreased likelihood of having an additional hour spent participating in college social integration activities. Considering the positive effects of high school GPA on college persistence and college GPA its negative effect on college social integration warrants further research. Furthermore, past research has shown that students who achieve academically in primary and secondary education are often socially isolated or ridiculed. Although academic success is less visible in higher education, particularly at larger institutions, successful students may have already learned to focus on academics and not actively seek out social interaction for fear of rejection. Similarly, an increase on a scale measuring the level of importance of college for a student's future goals is associated with a decrease in the likelihood of having an additional hour spent participating in college social integration activities. Students who believe that college is important to their future goals may be more committed to studying or participating in academic related activities instead of social activities. Increases in the number science courses taken in high school have a similar effect as the importance of college variable. Students who are employed during the school year also have a

decreased likelihood of having an additional hour spent participating in social integration activities, compared to students who were not employed. As with the previous dependent variables being employed during the school year deprives students of time to focus on school. The only two variables that increase the likelihood of having an additional hour spent participating in social integration activities are increases in trades and math courses taken in high school. These effects along with the effect of science courses on participating in social integration activities are intriguing results that warrant future study.

High School Extracurricular Activities

One of the goals of this study was to examine the value of including high school extracurricular activities as a pre-entry attribute considered to affect college persistence. The two variables used to examine the effects of participating in extracurricular activities both through the school and outside of school did have a significant effect on college persistence. An increase on the scale measuring the level of high school extracurricular activity participation was associated with a decrease in the likelihood of graduating in four years as opposed to graduating in six years; it had no effect on the likelihood of graduating in four years as opposed to never graduating. Similarly, an increase on a scale measuring the level of participation in extracurricular participation outside of school is associated with a decrease in the likelihood of in graduating four years as compared to never graduating; this variable had no effect on likelihood of graduating in four years as compared to graduating in six years. Neither high school extracurricular activity measure had a significant effect on college GPA;

however, an increase on a scale measuring the level of participation in extracurricular activities outside of school is associated with an increase in the likelihood of participating in an additional hour of college social integration activities.

These variables did not have the expected effect on the dependent variables. Previous research has shown the positive effects of participation in school activities as well as activities like private dance and music lessons, which were included in the out of school activity measure. In high school and primary education students who participate in extracurricular activities are seen as popular probably due to their visibility (Eder 1997). Additionally, participation in high school extracurricular activities has been shown to increase academic achievement and improves engagement in school (Cosden et al. 2004). Participation in high school extracurricular activities was expected to have a positive effect on college social integration because students would have participation in activities as a reference point for making friends. This study's findings partially confirm this expectation in that out of school extracurricular activities had a positive effect on participation in college social integration activities. The fact that out of school activities increased participation in college social integration activities, where as in school extracurricular activities did not, may be to due to the fact that out of school extracurricular activities are more similar to college activities. Both participation in out of school activities and college activities require a measure of personal time management. With out of school activities, students or their parents have to manage their schedule.

Students who participate in activities through school are likely to be reminded of their schedules by teachers, announcements, and peers. However, the lack of effect on student persistence and college GPA was unexpected, especially considering the academic boost they bring to students in high school academics. Perhaps the effects from high school do not last into college.

Gender Effects

The main goal of this research was to try to explain the effects of gender on student persistence in higher education among African American students. The results indicate that the effects of gender are significant throughout the majority of the models presented in the study. With this, few variables had an impact on reducing the effects of gender on persistence and related integration variables. From this research it is clear that some aspect of being "male" or being "female" leads to the growing gap in attainment between male and female students. The only covariates present in the study that had an impact on the effect of gender were in the models examining the effect of academic preparation, specifically high school GPA and declaring a major, and integration on the dependent variable first-year college GPA. When these variables were included in the model, the effects of gender were not significant. However, when these variables were not included in the model, females had a college GPA that was significantly higher than male students. Unlike with the dependent variable first-year college GPA, none of the covariates had an impact on the effect gender had on college social integration; females were significantly more likelihood to have spent fewer hours participating in college social integration activities. This is

consistent with previous research that identifies having a "social life" over

studying hard as being considered more masculine by male students (Jackson

and Dempster 2009). It should also be noted that several of the questions

included in the social integration measure are regarding socializing through

sports, which is typically associated with high rates of participation by male

students.

Most importantly the results of this study reveal that female students are

more likely to graduate in four years than to graduate in six years or never

graduate, compared to male students regardless of the covariates included in the

model. As previously mentioned, researchers have examined the effects of

gender on high school academic achievement. They found that certain aspects of

gender socialization may lead to differences in academic achievement

(Mickelson 1989; Buchamnn et al. 2008; Downey and Yuan 2005). Additionally,

Jackson and Dempster (2009) found that boys often felt that hard work was

uncool and in some cases even feminine and preferred to achieve through

"effortless achievement". These students would wait until the last minute to

complete assignments or deny to their peers working as hard as they did in an

effort to increase the perception of their natural intelligence. Likewise, when

these students did fail or got lower marks than expected, they often claimed to

not have tried at all in an attempt to maintain their status. This ethos has been

associated with hegemonic masculinities that associate manhood with power and

success (Connell 1996; Jackson and Dempster 2009). Although African

American males are not usually involved in hegemonic types of masculinity, they

are typically one of the groups considered inferior to boost the superiority of those who consider themselves to embody hegemonic masculinity; they are still socialized to desire it. By comparison, women may not find hard work threatening to their femininity. Additionally, research reveals that previous academic achievement benefits college attainment. Overall, this study reveals the need to further examine the gendered behaviors and attitudes that lead to differences in attainment.

Future Research

Although this research provides insight regarding gender effects in persistence in higher education it is clear that many questions still remain. Further research needs to be done to examine the effects of gender socialization on college persistence and achievement. Research such as that done by Jackson and Dempster (2009) provides some valuable information regarding this topic, however, it is important to have the perspectives of both male and female students. Additionally, research should examine how high school experiences directly relate to college experiences for incoming freshmen as this research has identified primarily first-year and pre-entry attributes to examine college persistence and achievement. This is especially important because it appears high school experiences and college experiences are more connected than assumed in the research. A more qualitative approach may be more appropriate for this research as it can examine both the behaviors and attitudes of students. Also, the way in which the models' variables mediate each other needs to be further explored.

Limitations

The research presented in this study is most applicable to traditional students attending four year institutions. Thus, it does not help explain persistence in students attending community colleges, non-traditional students or transfer students. This data set also does not appear to be representative of the general African American population with 56% of students reporting that their household income was above 50,000 dollars; according to census data in 2008, only around 34% of the African American populations' household income was at or above 50,000 dollars (2011). Additionally the overall graduation rate of this study's subjects was 80%, well above the 57% national average.

This study also has limitations in the measures used to examine factors such as student college social integration, academic integration, and participation in high school extracurricular activities were not exhaustive and provide a limited view of the conceptions that are intended to measure. In high school students have the opportunity to participate in a variety of activities through the school that were not reflected in the six measures used in the high school extracurricular activity variable; a similar case should be noted for extracurricular activities participated in outside of school. In light of the restricted activities students were questioned about it should be noted that some extracurricular activities that were not measured in this study could have a positive effect on student persistence. This is an issue that future research could address by expanding the range of activities included in the measure.

The variables measuring college social and academic integration were based on similar measures used previous research; these variables used participation in a variety of activities as a measure of integration (Fischer 2007). However, research examining the experiences of African American students suggests that this operationalization may not be the best measure for this population (Feagin et al,1996). The study by Feagin et al (1996) reveals that despite being active in the campus community some African America students still felt isolated or confined to certain spaces at PWIs. This study reveals the importance of student perceptions as a measure of integration and it has been used in previous research examining Tinto's model (Berger et al. 1999). It is a limitation of this study that social and academic integration were only measured using the number of activities participated in which may not reflected how students perceive their campus atmosphere. Future research should consider student participation in addition to student perception of integration.

Another aspect to be taken into consideration is the Tinto model itself. As noted in the discussion section the model was not to examine the effects of gender on college persistence in higher education using this sample. The research used in the early conceptions of Tinto's model and early attempts to validate the model were used with predominately European American students and thus it may be the case that the Tinto model has less explanatory power for African Americans. Lastly, because the study was ultimately unable to explain gender difference in persistence, other measures should be added in a further

attempt to examine these issues. One such suggestion would be to examine gender beliefs to explore what effect they have on student persistence.

Conclusion

One of the goals of this study was to explore the extent to which high school extracurricular activities performed in school and outside of school effect persistence in higher education. Contradictory expectations, the variables measuring their effect did not have the positive impact that was expected. However, the fact that these variables were significant supports the original assertion that they should be included as pre-entry attributes in the Tinto model. This is a significant contribution that should be further examined. As stated in the previous section the limited nature of the information corrected regarding high school extracurricular activities participation warrants more research with a more detailed collection of data. Nevertheless, these findings support the idea that high school experiences have a more direct or continued effect on college experiences outside of academic preparation.

This study provides support for the continued exploration of gender differences in higher education among African American students. Tinto's integrationist model for persistence in higher education provides valuable information regarding factors that contribute student attainment. However, this study shows that these well researched factors can not completely explain the effects of gender. The continued effect of gender on persistence in higher education among African Americans shows that entrance into higher education is not the resolution of conflict within the educational intuition for African American

males. Despite comparable backgrounds, African American females are more successful in attaining Bachelor's degrees. If the variables included in Tinto's model cannot fully explain the effects of gender on persistence some other factors must be at work.

One suggestion from previous research regarding academic achievement based on gender is to look at gender socialization to explain gender differences in achievement. This is a plausible cause because of the gendered patterns across race/ethnic groups in degree attainment. Additionally, the differences in gender socialization and responses to gender performance based on race/ethnicity would also help to explain the differences in gendered patterns across race with groups such as African Americans doing comparatively worst to all other groups. Thus researchers must continue to explore factors such as gender socialization and the effect that it has on student persistence in higher education. Future research is imperative as African America males continued to lag further behind other race/ethnic and gender groups.

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Yvonne Townsend

Date of Birth: Feburary-1-1986

Location: Youngstown, Ohio

Education:

B.A. Sociology and Psychology, The Ohio State University, 2008

Teaching Experience:

Teaching Assistant, Department of Sociology, University of Kentucky, August 2009-Present

Research Experience:

Yvonne Townsend. 2007. "The Effects of Visual Perspective and Temporal Distance on Achievement Motivation" Senior research course for Psychology majors examined topic as a class assignment to see if imagining a scenario from different visual perspectives and temporal distance would increase achievement motivation. The Ohio State University. Dr. Kentario Fujita

Yvonne Townsend. 2007. "Racial Disparities in Pain Management of Pain and Palliative Care Patients." Examined patients' reports of pain to see if there were any disparities across racial groups in patients' ability to manage illness related pain. The Ohio State University: The James Cancer Hospital and Solove Research Institute Center for Palliative Care, Dr. Sharla Wells-digregorio

Interests:

Sociology of education, race, class, and gender intersectionality, gender and women's studies, race and ethnic relations, social stratification, mobility, stereotyping, prejudice, discrimination and poverty

Paper Presentations:

Yvonne Townsend. 2011. "An Intersectional Review of Attainment in Higher Education and Tinto's Longitudinal Theory of Persistence." North Central Sociological Association Meetings.

Works in Progress:

Yvonne Townsend. "Examining Gender Difference in Persistence in Higher Education among African American Students."

Professional Memberships:

Member, American Sociological Association, North Central Sociological
Association

Departmental Memberships:

Sociology Graduate Student Organization (socgso)
        Member: 2009- Present, Treasurer: 2010-present