

RELATIONSHIP BETWEEN PARTICIPATION IN A RESIDENTIALLY-BASED  
FRESHMAN INTEREST GROUP AND DEGREE ATTAINMENT

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by  
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RELATIONSHIP BETWEEN PARTICIPATION IN A RESIDENTIALLY-BASED  
FRESHMAN INTEREST GROUP AND DEGREE ATTAINMENT

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RELATIONSHIP BETWEEN PARTICIPATION IN A RESIDENTIALLY-BASED  
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ABSTRACT

Informed by the Tinto's (1993) model of institutional departure and Astin's (1993) input-environment-output model and concept of involvement, this dissertation reports the findings of a secondary data-analysis examining the degree attainment of undergraduates who participated in a residentially-based Freshman Interest Group (FIG) at a selective research institution in the Midwest. Using logistic regression to control for the entering academic ability, ethnicity, gender, initial academic major, and parental income of entering first-time college students, the researcher found that students who participated in a FIG were more likely to earn a baccalaureate degree and graduate within 4 years. Furthermore, the effect size associated with FIG participation was significantly greater for lower income and lower ability students compared to the general population. Based on these findings, the researcher suggested that institutions would be well-served to create similar learning environments for students who have historically been considered "at-risk."

## Chapter 1

### OVERVIEW

#### Introduction

In 1983 the National Commission on Excellence in Education's *A Nation at Risk* issued a watershed call for reform in higher education. The report claimed that America's education was "being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people" (p.1). Several well-publicized reports followed. For example, the Wingspread Group (1993) and the Kellogg Commission (1997) both charged higher education to redesign the undergraduate experience to better prepare America's citizens for the 21<sup>st</sup> century.

Student affairs also joined in calling for reforms. In 1994, the American College Personnel Association published the *Student Learning Imperative*, a report that called on professionals to "take seriously their responsibilities for fostering learning and personal development" (p. 119). Administrators began to reexamine the role that student service departments, such as housing, could play in students' academic success. In a short span of time, residentially-based learning communities were created at large land-grant institutions across the country. Several of these programs included a curricular component in which first-year students took courses with a cohort of other students with similar academic interests. These programs became known as Freshman Interest Groups (FIGs).

The concept behind FIGs is simple, yet profound. A FIG is a group of approximately 20 first-year students who share a common academic interest. As a group, they are co-enrolled in two to three typical first-year courses as well as a 1 credit-hour

first-year seminar that is taught by an upper-class student and a faculty member with similar academic interests as the FIG. On many campuses the students are also housed in the same residence hall. By living together, taking courses together, and regularly discussing their experiences in a structured first-year seminar, students in FIGs supposedly will have better opportunities to make meaning of their undergraduate experience. Their living arrangements and curricular experiences, typically viewed as unconnected collegiate experiences, become complementary forces that help them focus on their learning and academic success.

Anxious to demonstrate improvements in retention to parents and lawmakers alike, institutional leaders are touting residential learning communities as a panacea for solving many undergraduate problems. According to the *Residential Learning Communities International Clearinghouse*, residentially based learning communities are now present at over 100 four-year campuses (pcc.bgsu.edu, ¶ 3) including large, research-focused institutions such as the University of Texas at Austin, Penn State University, Iowa State University, and regional institutions such as Sonoma State University and Northern Illinois University. Furthermore, these types of programs are gaining recognition in the mainstream media. In their 2004 rankings of colleges and universities, *U.S. News and World Report* highlighted the potential benefits of such programs by stating that “reform-minded colleges across the country are turning to innovative programs like learning communities and intensive semester-long freshman orientations to engage students in academics and hopefully offer measurable success in the form of higher retention rates and higher graduation rates” (USNews.com, ¶ 1).

Despite the fact that these programs expend valuable human and capital resources, there is little research that addresses their outcomes. Many of the quantitative studies that have been published have simply focused on differences in persistence and mean grade point averages between FIG participants and non-participants without accounting for important demographic and pre-college attributes such as entering academic ability, gender, ethnicity, academic major, or parental income. Qualitative studies have primarily focused on the interactions among participants within an individual FIG without comparing their experiences to students not in a FIG. Few have explored the issue of degree attainment. In short, higher education leaders need to more rigorously scrutinize the benefits of these initiatives before touting them as an answer to problems in undergraduate education.

### Conceptual Framework

Tinto's (1993) model of institutional departure and Astin's (1993) concept of student involvement provide an appropriate conceptual framework for examining differences in degree attainment between FIG and non-FIG students. "These models suggest that learning communities should increase students' development, achievement, and persistence through encouraging the integration of social and academic lives within a college or university and its programs, and through quality interaction with peers, faculty members, and the campus environment (Lenning & Ebbers, 1999, pp. 49-50).

Tinto's (1993) comprehensive model accounts for both student and institutional variables in understanding student attrition and persistence.

Broadly understood, it argues that individual departure from institutions can be viewed as arising out of a longitudinal process of interactions between an individual with given attributes, skills, financial resources,

prior educational experiences, and dispositions (intentions and commitments) and other members of the academic and social systems of the institution. The individual's experience in those systems, as indicated by his/her intellectual (academic) and social (personal) integration, continually modifies his or her intentions and commitments (p. 114-115).

Tinto suggests that pre-college attributes such as ethnicity, gender, parental education, and entering academic achievements directly impact persistence. More importantly, each affects departure indirectly through its effect upon "the continuing formulation of individual intentions and commitments regarding future educational activities" (p. 115). Intentions and commitments are key elements of the model. According to Tinto, intention is an important predictor of persistence. "Generally speaking, the higher the level of one's educational or occupational goals, the greater the likelihood of college completion" (p. 38). Tinto defines commitment not only as the student's motivation for success, but also the quality of effort exerted by the student.

While students' entering characteristics obviously influence intention and commitment, it is the experiences within the academic and social systems at the institution that are of interest to those designing residentially-based FIGs. Tinto (1993) suggests that a student continually evaluates his or her experiences within the social and academic system. This in turn leads to re-evaluating the student's goals and commitments and through the re-evaluation process, the student decides to remain at the institution or withdraw. Although "integration or membership in the academic or social systems of the college are argued to be conceptually distinct process, they are mutually interdependent and reciprocal" (p. 119). This notion of integrating the social and academic systems is the key concept behind FIGs. "When the cultures of the academic and social systems are supportive of each other, then the two systems may work in consonance to reinforce

integration in both the academic and social systems of the institution” and “their interaction may further the institutional goal of retention” (p. 119).

Similarly, Astin (1993) suggests that the degree to which a student is involved with faculty, peers, and his or her academics have direct effect on persistence. Most of Astin’s research is based his input-environment-outcome (I-E-O) model. “Inputs refer to the characteristics of the student at the time of initial entry to the institution” (Astin, 1993, p. 7). In the case of examining the relationship between FIGs and degree attainment, participation in a FIG is an environmental variable. The studied outcome is degree attainment. Using this concept of involvement within the I-E-O framework, one would hypothesize that after accounting for input variables, if participation in a FIG leads to involvement and involvement leads to persistence, one would expect higher graduation rates for FIG participants. Both Tinto’s model of institutional departure and Astin’s concept of involvement will be thoroughly examined in Chapter 2.

### Review of Literature

Freshman Interest Groups (FIGs) were created in 1982 at the University of Oregon (Uoregon.edu, ¶ 2). The University of Oregon’s model clustered students into groups of approximately 20 based upon their academic interests and co-enrolled the students in two typical first-year large courses. “The FIG group within these larger classes is linked together through College Connections, a 1-credit course typically taught by one of the faculty teaching the two larger classes” (Uoregon.edu, ¶ 1). This faculty member was assisted by an upper-class undergraduate who served as a peer mentor for the students. Similar models were created in the 1980’s at institutions such as the University of Washington. During the 1990’s, residentially-based FIGs in which

participants were also housed in the same residential community emerged. Despite them being a relatively new phenomenon, there are some published studies examining the impact of FIGs and learning communities on student persistence.

Two quantitative studies conducted at the University of Washington have examined the relationship between students who participate in FIGs and retention. The University of Washington's program co-enrolls students in groups of 20 in three courses around a similar theme as well as a one credit-hour FIG seminar. It should be noted that the students in the two studies did not live in the same residence hall and one should be cautious in drawing comparisons between these studies and studies conducted on residentially-based FIGs.

In the first study, Tokuno (1993) examined differences in retention between participants and non-participants for the entering classes of 1988, 1989, and 1990. He found that for all three entering classes, the FIG students were retained at a higher rate than the non-FIG students. However, the study did not control for entering ability even though the researcher found that students who enrolled in a FIG had significantly higher ACT composite scores. Tinto and Goodsell-Love (1993) also examined retention of FIG students at the University of Washington for the 1991-1993 entering classes. They found that 99.2% of the FIG students were retained for their second semester versus 95.8% of the non-FIG students (p. 51). Furthermore, FIG students' mean GPA was 3.14 versus 2.98 for non-FIG students (p. 50). Using discriminant analysis, stepwise regression, and logistical regression, they found that these differences were statistically significant even after controlling for entering academic ability and gender.

Another study on retention in FIGs was conducted at the University of Missouri-Columbia (MU) in the mid 1990s. Pike, Schroeder, and Berry (1997) used institutional and survey data to try to explain differences in persistence between participants and non-participants of residentially-based FIGs. Initial assessment found that the freshman to sophomore retention rate was higher for FIG students versus non-FIG students (87% versus 82%). Using a conceptual model based upon the work of Nora and Cabrera (1996) and a two-group path analysis, they found that there were indirect effects on persistence and achievement from the FIG experience. Two of the major findings were that FIGs had a “substantial positive effect on faculty-student interaction” and “positive effects on social integration and institutional commitment” (p. 617).

Although this study used complex statistical analysis, two limitations to the study are important to note. First, the study was conducted in 1995, the first-year of MU’s program. At the time, only 225 of the 3,845 first-time college students, or 5.9% of the entering class, participated in a FIG. Thus, one could argue that the program was extremely selective and the type of student who chose to join such a program had different intentions compared to typical students. A second limitation is the timing of the survey. The survey was administered the tenth week of the fall semester. It is likely that some students who could have participated in the study dropped out prior to the tenth week of class.

In addition to the quantitative studies on persistence, several qualitative studies have examined the student experience of participants within FIGs. Using a business residential FIG as a case study, Buss (2002) examined the academic and social experiences of six students at a Midwest public land grant institution. She found that the

participants joined the community “to meet new people and make new friends” (p. 208). She found this to be true of students at both rural and urban settings. Additionally, she reported that students who joined “wanted to take classes together and study and work together” (p. 208). She concluded that the “participants expressed a higher level of self-confidence and felt that they had also become more open minded as a result of their experience” (p. 211). In 1991 and 1992, Goodsell (1993) interviewed and observed students in non-residentially-based FIGs at the University of Washington. She found that students in FIGs were able to make strong social connections with fellow members but did not regularly discuss academic experiences.

While this research has provided some understanding of student experiences within a FIG and its impact on both persistence and academic achievement, questions still remain regarding persistence of various subgroups of students. Do FIGs benefit both high and low ability, male and female, white and black students, and journalism and biology majors alike? Furthermore, while retention is a concern for administrators focused on enrollment management, degree attainment is the issue in which most external constituents are interested. Are there differences in graduation rates between FIG and non-FIG students and, if so, are the differences consistent for various subgroups of students?

#### Purpose of the study

The purpose of this study is to examine the differences in graduation rates between FIG and non-FIG students at a public, residential Midwestern land-grant research-extensive institution, while controlling for gender, ethnicity, socioeconomic class, initial academic major and entering academic ability. As will be discussed in

Chapter 2, research suggests that these particular demographic and pre-college attributes are important variables to consider when examining college persistence.

### Research Questions

The study will address the following questions:

1. Controlling for demographic and pre-college attributes, what variables explain degree attainment between students who participate in a FIG and those who do not?
2. Controlling for demographic and pre-college attributes, what variables explain the time to completion between students who participate in a FIG and those that do not?
3. Controlling for demographic and pre-college attributes, what variables explain differences in degree attainment for lower income or lower ability students who participate in a FIG and those who do not?

### Research Design

A quantitative research design at a single institution will be used to address the three questions. An institutional database containing demographic and academic data for all first-time college students entering the institution in 1998, 1999, 2000, and 2001 will be used as the data set. Variables included in the data include gender, ethnicity, initial academic major, ACT composite score, SAT composite score, high school grade point average in core courses, and parental income. As will be discussed in Chapter 2, research suggests that these demographic and pre-college attributes affect persistence. The data will be analyzed using logistic regression, which will be further discussed in Chapter 3.

### Definitions

As will be discussed in Chapter 2, there are multiple definitions of “learning communities.” Often learning communities are defined by their structural components

such as common courses, shared housing, and first-year seminars. A general term for a learning community that enrolls students in common courses is a Freshman or First-year Interest Group (FIG).

For this study a FIG will be defined as a group of up to twenty first-year students who live in the same residence hall community and are co-enrolled in three general education courses. The students also participate in a one credit-hour first-year experience course that is exclusive to their group's members. This course is co-taught by a faculty or academic staff member, such as professional academic advisor, and an upper-class peer who also lives on the same residence hall floor as the FIG students. Approximately half of the content of the first-year experience course is focused on typical issues that first-year students face, such as managing time, appreciating diversity, making ethical decisions, and understanding the role of academic advising. The other half of the course is designed to expose students to the theme of the FIG or academic major. For example, students in a journalism FIG may learn about differences in working with broadcast versus print media. Students in a science FIG may explore career opportunities associated with biological and physical science degrees.

Graduates will be defined as a full-time student who obtains a baccalaureate degree within a defined period of time. For the purposes of this study, the researcher will examine four and six-year graduation rates.

### Limitations

There are several limitations to this study. First, as previously mentioned in the critique of Pike, Schroeder, and Berry's (1997) work, students self-select into FIGs. Thus, one could argue that the intentions and commitments of students who prefer a FIG

are different than those who do not. Having said that, approximately 1200 students, or over 25% of the entering class at the institution to be studied, participate; therefore, the program is not as selective as the entering class in Pike, Schroeder, and Berry's (1997) work. Furthermore, by disaggregating graduation data by entering academic major, one could argue that the study is minimizing some of the initial differences in intentions of students by looking at students with similar academic aspirations. A second limitation is this study explains the relationships between participation in the FIG, entering characteristics, and degree attainment. If one wanted to study the causal relationship between of FIG participation and degree attainment, he or she would need to use more advanced statistical methods such as structural equations modeling. Finally, the study is at a single institution. Thus, the ability to generalize the data to other institutions will be limited.

#### Significance of the Study

The study may have implications for both researchers and practitioners. As stated earlier, previous research has only looked at differences between FIG and non-FIG students' persistence rates. As indicated in the discussion of Tinto's (1993) conceptual framework, gender, ethnicity, parental education, and entering academic achievement directly and indirectly influence persistence. To better understand the effects of linking academic and social systems, one needs to consider the students' entering characteristics. Discovering differences or similarities between subgroups of FIG versus non-FIG students could have implications for the manner in which future research on retention issues for those subgroups of students is conducted. Furthermore, examining degree

attainment may provide further insight into the impact that the first-year of college has on graduation for various subgroups of students.

From a practitioner standpoint, understanding the differences in persistence and graduation could be helpful in the creation of new FIG initiatives. For example, if it is discovered that a certain subgroup of student does not appear to benefit from the program, one may question if scarce resources should be targeted towards that subgroup. On the other hand, if significant differences are found, particularly for subgroups of students more likely to drop out, perhaps those students should be required to participate in a FIG. Regardless, at a time when tuition is rising and both human and economic resources are scarce, it is imperative that higher education begins to understand the long-term outcomes of attempting to integrate the curricular and co-curricular undergraduate experiences.

### Summary

Over the past twenty years, various reports have called on higher education to reform undergraduate education. One recent innovation designed to provide a more coherent undergraduate experience at residential institutions is Freshman Interest Groups (FIGs). Despite their popularity among college administrators and their recent publicity in the mainstream media, research on their effectiveness is limited. Qualitative studies suggest that these programs assist students in transitioning to college by providing social and academic support. Quantitative studies suggest that participants in these programs persist at higher rates than non-participants. However, many of these studies have been limited in scope and some have not accounted for participants' demographic and pre-college attributes known to affect persistence.

Taking into account important demographic and other pre-college attributes, this study will examine the differences in degree attainment of FIG and non-FIG participants at a public, residential Midwestern land-grant research-extensive institution. It will also consider the differences in time to completion between FIG and non-FIG participants. Finally, it will explore differences in degree attainment among subgroups of FIG and non-FIG participants based on gender, ethnicity, entering ability, entering academic field, and socioeconomic class to identify the types of students who may benefit the most or least from the FIG experience.

## Chapter 2

### LITERATURE REVIEW

#### Introduction

Residential learning communities and, more specifically, Freshman Interest Groups (FIGs), have become a popular innovation for reforming undergraduate education on campuses across the country. As previously discussed, research has suggested that such programs may enhance the undergraduate experience and help students persist. This chapter will first examine the historical and philosophical roots of learning communities, the role of residence halls in the late nineteenth century, and the external factors that influence the revitalization of learning communities. The review will then examine the various benefits of such programs, including the limitations and weaknesses in the current research on this topic. Next is a review of current literature on college retention and degree attainment with an emphasis on the pre-college academic and demographic attributes that may affect persistence. The chapter will conclude with a discussion of the significance of this study and the conceptual framework that will be used to examine the relationship between FIG participation and degree attainment.

#### History of Learning Communities

In January of 1928, the *New York Times* ran a series of five articles highlighting a growing crisis in American higher education. Enrollments were on the rise. On a per capita basis, there were four times as many students attending an institution of higher education in the United States compared to England and France (Duffus, 1928). As a result, average class sizes were increasing. Large lectures were becoming a common method of instruction. The articles suggested that a good instructor “must possess the

ability to dramatize his [or her] subject, so that the drowsing student in the last row will every now and then wake up and grasp a fact or principle” (Duffus, 1928, p. 21). Duffus also critiqued the growing bureaucracy needed to insure that students were actually achieving academic excellence. He was particularly critical of the need for grading systems, deans, and registrars, and suggested that they could be reduced if “every American baby were given an A.B. degree at birth” (Duffus, p. 21) or “if a college were really a place to which most students went to acquire an education.” (Duffus, p. 21). After visiting several institutions and interviewing former college presidents, the author concluded that “the problem of the State university is the very practical one of trying to break up its great masses into informal groups without adding too much to the cost of instruction” (Duffus, p. 21).

Seventy-eight years have passed since the publication of these *New York Times* articles. Since that time, hundreds, if not thousands of critiques of education have been written. Perhaps the most famous was the National Commission on Excellence in Education’s (1983) *A Nation at Risk*, which claimed that America’s education was “being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people” (p.1). More recently, the Wingspread Group (1993) and the Kellogg Commission (1997) both challenged higher education to redesign the undergraduate experience to better prepare America’s citizens for the 21<sup>st</sup> century. The general public has also been exposed to these issues via mainstream books such as Allan Bloom’s (1987), *The Closing of the American Mind*, Diane Ravitch’s (2000) *Left Back*, and most recently the Public Broadcast Service’s (PBS) *Declining by Degrees: Higher Education at Risk* (2005). After

reviewing these critiques, one could make the case that higher education is still trying to solve the problems identified in the early twentieth century.

One of the recent “innovations” created to address some of these concerns is a learning community (Gabelnick, et. al., 1990). While there are several variations of this concept, the underlying philosophy of a learning community is that students learn best in small groups where they have the opportunity to engage one another in educationally purposeful activities. Therefore, both their experiences in and out of class should be designed to complement and reinforce each other. In short, learning communities are a practical way for higher education to “break up its great masses into informal groups” (Duffus, 1928, p. 21) and help students make the most of their undergraduate experience.

The notion that the co-curricular experiences of students can influence students’ learning can be traced to the nineteenth century when institutions began de-emphasizing the residential experience. During the 1860’s Michigan abolished its dormitories, and Harvard discontinued by 1900 its requirement that students live on campus (Duke, 1996). “Dormitories were expensive to build and maintain, and money was often needed for other projects” (Duke, p. 42). Other schools followed. Students began to form peer relationships via fraternities and athletics. Instead of these activities reinforcing the academic experience, they became distractions. To the dismay of administrators, college athletic teams, not the curriculum, had “become the experience that affirmed one’s association with his [or her] school” (Duke, p. 43). It was in the early twentieth century that Woodrow Wilson, President of Princeton, declared that co-curricular activities had become the “sideshow that had swallowed the circus” (Duke, p. 42).

### *Meiklejohn's Experimental College*

The late 1920's was a time of renewed interest in using the residential experience to enhance the undergraduate education. Alexander Meiklejohn is considered "the father to the learning community movement" (Gahlenick, et. al., 1990, p. 11). Meiklejohn, who served as the President of Amherst College from 1912-1923, was critical of the direction that the undergraduate curriculum was heading (Brown, 1981). He "opposed the elective curriculum, since students could hardly be expected to make any sense of discrete bits of knowledge to the problems of living" (Brown, 1991, p. 12). Instead of electives, he believed that students should have a common experience in which they could engage with one another about their courses. In 1927 he had the opportunity to create such an experience as the head of the Experimental College at the University of Wisconsin-Madison.

Meiklejohn's Experimental College, which existed from 1927-1932, was founded on the concepts of a shared, coherent curriculum and a common living arrangement. Meiklejohn (1932) believed that "a college is a group of people, all of whom are reading the same books" (p. 40), and that "the course shall be the study of a single topic, and every separate subject within it shall be recognized as a special phase of the central inquiry" (p. 45). Therefore, the curriculum at the Experimental College was organized so that a student spent his first year studying Athens and the second year studying nineteenth century America. "By comparing and contrasting these he was to make for himself an understanding of what a civilization is" (Meiklejohn, p. 69). Meiklejohn further believed that "conditions of residence and association should be so arranged that the intellectual and social relations would fuse together-- that advisers and students would become a

closely-knit intellectual community” (Meiklejohn, p. 215). Therefore, all students were required to live in the same residence hall and the faculty of the college regularly dined with the students. Meiklejohn hoped that the integration of the curriculum and living arrangements changed the way students viewed their education. He proposed that the students “breathe it in, eat it in, play it in, smoke it in, laugh it in, discuss it in, until education becomes what it ought to be-- not a set of imposed, demanded, external tasks, but a form of human living and association, the natural and inevitable growth of a healthy organism in a congenial environment” (Meiklejohn, p. 227-228).

### *Harvard Houses and Yale Colleges*

During the same time period, other innovations involving residence halls as a means of enhancing the undergraduate experience occurred. In 1929 Harvard created the “House” system and, two years later, Yale created a similar system called “Colleges” (Duke, 1996). Modeled after the residential colleges of Oxford and Cambridge, both “plans relied heavily on the assumption that housing faculty and students under one roof would help generate an intellectually stimulating atmosphere” (Duke, p. 91). Both institutions received a generous donation from Edward Harkness, an oil millionaire and, ironically, an alumnus of Princeton (Duke, 1996). Both institutions constructed new dormitories to house the ‘Houses’ and ‘Colleges’. “In the vision of the founding donor, these ‘quadrangles’-- all built, like the colleges of Oxford and Cambridge, around courtyards—created manageable communities in the modern university” (Smith, 1994, pp. 251-252). A faculty member or “master” was appointed to each hall along with a master tutor and up to six other tutors which were generally graduate students (Duke, 1996). Duke (1996) contends that while these two initiatives were considered successful,

they did not live up to the expectations their creators had envisioned. The residential colleges did not systematically integrate the curricular components of the institution in their design nor did they try to change the governance of the institutions. The houses and colleges were simply created as an add-on to the existing structure. Despite these challenges, the “Harvard Houses” and “Yale Colleges” are still a part of the undergraduate experience at Harvard and Yale today.

*Experiment at Berkeley and Evergreen State University*

In 1965, thirty years after the Experimental College ended, Joseph Tussman, a student of Alexander Meiklejohn but not a participant in the Experimental College, attempted to replicate the core components of the Experimental College at the University of California at Berkeley (Tussman, 1969). The Experiment at Berkeley, which lasted only four years, was designed to integrate the curriculum in a residential setting. Participants in the program did not take individual classes. Instead, the curriculum consisted of common readings, term projects that occurred during the semester break, individual conferences, seminars and lectures, and writing on the themes related to Western civilization. Ten faculty were assigned to the 150 participants, who all lived in a vacated fraternity house (Tussman, 1969). At the end of their sophomore year, the students received 48 credit-hours towards their general education requirements.

Although the Experiment at Berkeley was short-lived, “Tussman’s work inspired faculty in Washington state, who, in 1970, were planning a new state school: The Evergreen State College” (Hurd & Stein, 2004, p. 5). Instead of creating a college structured by departments that taught individual courses, the founders designed “much of the new college around year-long learning communities called ‘coordinated studies’

programs that would be team taught and organized around interdisciplinary themes” (Gahlenick, et. al., 1990, p. 14). Unlike Meiklejohn and Tussman’s experiments, which took place within an existing institutional structure, the founders of Evergreen had the luxury of creating an entire institution based upon a seamless, integrated curriculum. While knowledge has certainly changed over the past 30 years, instruction at Evergreen still is delivered solely via coordinated studies. For example, the coordinated program “*Matter and Motion* is a year-long program in college calculus, chemistry, physics, and computer applications” (Gahlenick, et. al., p. 29). Interestingly, unlike the participants of the Experimental College and the Experiment at Berkeley, students in coordinated studies at Evergreen are not housed together.

In summary, the early pioneers of learning communities viewed them as a tool for reforming undergraduate education. It is important to note that these pioneers were educators who were internally motivated to create a more seamless, coherent learning experience for students. Meiklejohn, Tussman, and the founders of Evergreen were particularly critical of the fragmented elective system of general education and used learning communities to completely redesign the undergraduate curriculum. They challenged the notion that a curriculum must be composed of standardized courses and that faculty must only teach content related to their discipline.

#### *Revitalization of Learning Communities*

In contrast to the early pioneers of learning communities who viewed learning communities as a pedagogical tool for reforming undergraduate education, the recent interest in learning communities has been elevated by external forces. Stassen (2003) attributes the recent revitalization of learning communities to two external phenomena

that began in the latter part of the twentieth century. First, as previously mentioned numerous reports published during this time questioned the quality of the educational experience in higher education. Several of these reports, such as *A Nation at Risk* (1984), received attention by both lawmakers and the general public alike. Second, and perhaps more importantly, “during the same time period, higher education faced significant financial constraints, which focused administration attention on methods for maintaining undergraduate enrollment, particularly through improving student retention and persistence” (Stassen, 2003, p. 582). Stassen suggests that learning communities were seen as a viable response to the various calls for reform and an efficient way to increase student persistence. Recently, they have also been viewed as a tool for not only retention, but also recruitment as evidenced by *U.S. News and World Report* as a “program to watch for” (USNews.com, ¶ 1). Although they have become popular on a variety of campuses, it is important to note that unlike Meiklejohn and Tussman, today’s pioneers of learning communities are not challenging the core of the undergraduate curriculum. Today’s learning communities tend to work within the existing structure of institutions and there is much variance to the degree in which students’ curricular and co-curricular experiences are integrated.

Despite the variance in curricular and co-curricular integration and their relatively new re-emergence on colleges, some research on the benefits of participating in such programs has been published in refereed journals. The next section will review such literature.

## Research on Learning Communities Outcomes

Several studies have examined the relationships between participation in learning communities and various undergraduate outcomes. The first section will address various definitions of learning communities in the literature. Given the variance in components among learning communities, it is important for the reader to understand the nuances associated with these programs as their outcomes are examined. The second section will examine research related to learning communities and persistence, academic achievement, academic and social integration, and student culture. The final section will discuss the general limitations of the research on learning communities.

### *Definitions of Learning Communities*

One of the major difficulties in discussing learning communities is that the term itself is quite ambiguous, varies from campus to campus, and has multiple meanings to faculty, administrators, and students. Gabelnick, MacGregor, Matthews, and Smith (1990) define them as “one of a variety of curricular structures that link together several existing courses—or actually restructure the curricular material entirely—so that students have opportunities for deeper understanding and integration of the material they are learning” (p. 19). Others view learning communities as entirely residential. This perspective views learning communities as simply theme-based housing where students live with other undergraduates with a common interest.

Laufgraben and Shapiro (2004) provide a more inclusive definition for learning communities. They discuss basic characteristics shared by learning communities such as small groups of faculty and students, integration of curricular components, and opportunities for students to “establish academic and social support networks” (p. 3).

They describe four emerging models for classifying learning communities: “(1) paired of clustered courses, (2) cohorts in large courses of FIGs (freshman interest groups), (3) team-taught programs, and (4) residence-based learning communities” (p. 5). However, in their discussion of residence-based communities, they emphasize that these “go beyond assigning students with similar majors to the same floor of a residence hall” (p. 8). In their definition, there must be a curricular component to such a community. Thus, residence-based learning communities are typically an adaptation of one of the first three models with an added residential component.

As one can see the task of simply defining what constitutes a learning community can be tedious. Furthermore, the nuances of how these models are actually implemented in a given institution can mean that every institution may define learning communities differently. Thus, as one begins to review the benefits of such programs, it is important to carefully examine the components embedded in the learning community under examination to insure that the researcher’s definition of learning communities is congruent with definitions used in similar studies.

#### *Persistence and Academic Achievement*

Perhaps the two most common reasons that learning communities are created are to increase freshman to sophomore retention and help students perform better academically. There are multiple studies that suggest that these programs do, in fact, benefit students in both areas.

As mentioned in Chapter 1, two of the earliest studies to examine the relationship between retention and participation in Freshman Interest Groups (FIGs) were conducted at the University of Washington. Tokuno (1993) studied differences in retention between

participants and non-participants for the entering classes of 1988, 1989, and 1990. During these years, 1,289 of the 10,359 entering first-year students participated in a FIG. Tokuno found that for all three entering classes, the FIG students were retained at a higher rate than the non-FIG students. He also found that the FIG students earned credit hours at a faster rate than the non-FIG students. This fact led him to speculate that participants may graduate at a faster rate than non-participants. However, the study did not control for entering ability even though the researcher found that students who enrolled in a FIG had significantly higher ACT composite scores. Thus, it is possible that the differences in persistence between FIG and non-FIG participants could be explained by the entering academic ability of the students and not participation in the FIG. Tinto and Goodsell-Love (1993) also used institutional data to examine retention of FIG students at the University of Washington for the 1991-1993 entering classes. They found that 99.2% of the FIG students were retained for their second semester versus only 95.8% of the non-FIG students (p. 51). Furthermore, FIG students' mean GPA was 3.14 versus 2.98 for non-FIG students (p. 50). Using discriminant analysis, stepwise regression, and logistic regression, they found that these differences were statistically significant even after controlling for entering academic ability and gender.

More recently, Pence, Workman, and Haruta (2005) examined the retention rate for students who participated in a non-residential First-Year Interest Group (FIG) targeted for pre-medicine, biology, and chemistry students at the University of Hartford for the 2000-2001 academic-year. Students were co-enrolled in pre-calculus, biology, and chemistry courses in which the instructors intentionally overlapped their course content, including an overlap in some assignments. For example, data collected by students in the

chemistry lab were later analyzed using mathematical concepts in the pre-calculus course. To assess the impact on retention, the researchers used historical data of students who simultaneously enrolled in both chemistry and pre-calculus and controlled for entering academic ability. The FIG students had a dramatically higher retention rate. Eighty percent of the FIG students were retained to the end of their sophomore year compared to 49% of a historical control group. Furthermore, the FIG group was more ethnically diverse. Fifty-three percent of the FIG students were classified as a minority where the control group was only 27%. However, caution should be taken before generalizing these results since the study contained less than 50 FIG participants and the historical comparison group is not necessarily a precise control group.

As mentioned in Chapter 1, a study on retention of Freshman Interest Groups (FIGs) was conducted at the University of Missouri-Columbia in 1995. Pike, Schroeder, and Berry (1997) used institutional and survey data to explain differences in persistence between participants and non-participants of residentially-based FIGs. Participants in the FIG took three common general education courses and a first-year seminar, and lived in the same residential facility. During the tenth week of the fall semester, surveys were mailed to the 3,845 first-year residential students, of whom 225 participated in a FIG. Thirty-eight percent of the surveys were returned and comparisons were made between FIG and non-FIG students. Initial statistical analyses found that the freshman to sophomore retention rate was higher for FIG versus non-FIG students (87% versus 82%). Using a conceptual model based upon the work of Nora and Cabrera (1996) and a two-group path analysis, the researchers found that there were indirect effects on persistence and achievement from the FIG experience. Two of the major findings were that FIGs had

a “substantial positive effect on faculty-student interaction” and “positive effects on social integration and institutional commitment” (p. 617). However, neither finding proved to have a direct impact on persistence.

Knight (2003) studied the impact of both non-residential first-year programs and residential learning communities at Bowling Green State University (BGSU) for all first-time college students who entered the institution between 1997 and 2001. It should be noted that the researcher did not indicate the total number of participants in the study. BGSU’s learning communities emphasize study groups, faculty interaction, and special academic programming, but do not have a structured curricular component such as linked coursework. Using institutional data and controlling for gender, race, and entering academic characteristics, he found that some of the residential learning communities had a positive impact on academic achievement and retention while others did not. Further analyses using a multiple regression with interaction terms of gender and ethnicity resulted in an interesting finding with regard to race and gender. Specifically, some of BGSU’s learning community programs had more positive benefits with regards to retention and academic achievement for women and students of color than others. Knight noted that the literature on learning communities has not addressed this issue, but noted the potential benefits for future programs designed to retain such students. “Planners may be well served by linking such results to campus initiatives designed to enrich the experiences of certain populations” (p. 10).

There is some evidence that learning communities can be designed to help under-prepared students as well. Wilcox and DelMas (1997) examined the results of a non-residential learning community at the General College at the University of Minnesota,

Twin Cities. The General College serves approximately 800 students who do not meet admission standards for other colleges at the institution. Students in the learning community co-enrolled in a curricular package consisting of 3-4 courses including a course designed to help students develop study skills. Controlling for entering academic ability, the researchers found that students in the program earned higher grades for the semester in which they participated in the learning community, but there were no statistical differences between the grades of the two groups in subsequent semesters. Participants also reenrolled at the institution at a higher rate their sophomore year.

Stassen (2003) studied the relationship between participation in residential learning communities and retention at a large research institution in the northeast. The campus provides three types of living-learning programs for first-year students. The Residential Academic Program (RAP) allows participants to live in a common hall and take a common writing course. RAP serves approximately 700 students, half of whom have not selected an academic major. The Talent Achievement Program (TAP) allows participants to live in the same hall and take at least two courses together as well as a first-year experience course. These groups are based upon participants' academic major, and there are currently 13 different groups serving over 300 students. Finally, the Honors College Community is similar to TAP; however, the participants are students admitted to the Honors College and the two co-enrolled courses are honors courses.

Stassen (2003) used institutional data for the entering classes of 1999 and 2000 to determine the impact of the three programs on academic achievement and freshman to sophomore retention. Using a linear regression model to control for entering characteristics such as high school grade point average (GPA), Scholastic Aptitude Test

(SAT) scores, gender, ethnicity, and academic program, she found that all three programs had a positive effect on first-semester GPA. Similarly, she used a logistic regression with the same entering variables to determine the impact on retention. For the 1999 cohorts, each program had a positive impact on persistence. “RAP students were 34% less likely to leave after their first year than similar students not enrolled in an LC, TAP students were 33.3% less likely to leave, and Honors students were 60.4% less likely to leave” (p. 597). She found similar results for the TAP and RAP students in the 2000 cohort, but the results for the honors program in 2000 failed to reach statistical significance. Based on the research design and methodology, this is perhaps the strongest quantitative study that demonstrates a positive relationship between learning communities and retention to date.

#### *Academic and Social Integration*

In addition to trying to quantitatively measure the relationship between learning community affiliation and persistence, several studies have tried to understand why these programs help students persist. Research suggests that the degree to which a student becomes involved and is able to academically and socially integrate into the campus will impact his or her decision to persist at the institution (Astin, 1993; Tinto, 1993). Several studies have used this conceptual framework to study the degree to which learning communities help facilitate social and academic integration.

Using a business residential FIG as a case study, Buss (2002) examined the academic and social experiences of six students from a Midwest public land grant institution. She found that the participants joined the community “to meet new people and make new friends” (p. 208). She found this to be true of students at both rural and urban settings. Additionally, she reported that students who joined “wanted to take classes

together and study and work together” (p. 208). She concluded that the “participants expressed a higher level of self-confidence and felt that they had also become more open minded as a result of their experience” (p. 211). In 1991 and 1992, Goodsell (1993) interviewed and observed students in non-residentially-based FIGs at the University of Washington. She found that students in FIGs were able to make strong social connections with fellow members but did not regularly discuss academic experiences.

Correll, Ragon, Thieme, and Wilburn (2002) conducted a study that compared the academic and social integration between students in residential versus non-residential FIGs at a “large, public, residential Research I university located in the Midwest during the fall semester of the 2001-2001 academic year” (p. 15). All of the students in these FIGs were co-enrolled in several courses and each FIG was assigned its own section of a one credit-hour first-year experience course that was taught by an upper-class student. However, some of the FIGs were residentially-based while others were designed for students who could live in any residence hall or off-campus. Using a 37 item Likert-scaled questionnaire designed to measure academic and social integration, the researchers compared the responses of 269 first-year students, of whom a third were in a residential FIG and two-thirds were in a non-residential FIG. It should be noted that there was not a control group of non-FIG participants in the study to compare the impact of either program to non-FIG participants.

The study found very few statistical differences between the residential and non-residential FIG students in terms of academic integration. Both groups reported a strong desire to study alone instead of in groups, although the residential FIG students did report a slightly higher desire for group study. The study also found that all of the students

prefer to study in their own rooms instead of in the library or an off-campus site. Thus, although the residential FIG students may not have a desire to study often with one another, they end up doing so more frequently than students in non-residential FIGs simply because they study in their residence hall room. There were no statistical differences in the respondents' self-reported grade point average or their views on class attendance.

Conversely, in terms of social integration, the residential FIG students had a more positive experience compared to their non-residential counterparts. Students in the residential FIGs were more likely to spend their free time with fellow FIG members, eat meals with fellow FIG members, and were less likely to go home on weekends compared to the non-residential FIG students. The authors concluded that “proximity and increased interactions from living among one another” (p. 23) helped the residential FIG students socially integrate into the institution. Given that Tinto's (1993) retention model is based upon both academic and social integration, a follow-up study comparing the retention of the two groups would have provided further insight into how the residential component of FIGs impacts the overall retention of first-year students.

Using Astin's (1993) inputs-environments-outcomes (I-E-O) model, Inkelas and Weisman (2003) studied the impact of three different residentially-based learning communities at a highly competitive public research university in the Midwest. The study included 4,269 randomly selected residential students, of whom 61.2% participated. Using a 44-question survey, the researchers asked both participants of the learning communities and a control group about “their ease or difficulty with their adjustment to college, the types of activities they have participated in while in college, their perceptions

of academic and social climate in their residence hall, and their preferences for or against varying aspects of intellectual engagement and curiosity” (p. 343). Using institutional demographic data to account for differences in gender, ethnicity, academic major, and entering academic ability, the researchers conducted multiple regression analyses to measure the impact of the living-learning environment on various student outcomes. The researchers found that “living-learning participants, more often than their control group counterparts, enjoy: (a) a smooth transition to college during their first year; (b) challenging academic pursuits; and (c) learning new or different perspectives” (p. 346). To insure that the data were not biased due to one of the learning communities serving only honors students, the researchers ran an ancillary analysis of their data for students with a composite SAT score of 1310 or higher and found that the living-learning students “had significantly higher mean scores among the three outcomes than non-participants (p. 346).

### *Student Culture*

In addition to positively affecting retention and academic achievement, there is a limited body of knowledge that suggests learning communities may positively shape the culture of the students who participate in such programs. Specifically, there are two studies that suggest students in learning communities are less likely to abuse alcohol and are also more tolerant of others who are different from themselves.

Brower, Golde, and Allen (2003) studied the effects of residential learning communities (LCs) on binge drinking at the University of Wisconsin-Madison. Students in the program lived with other students with similar interests and were given the option of enrolling in common courses specifically designated for the learning community

participants. Additionally, the learning community provided participants opportunities to interact with faculty and academic staff via programming and field trips. However, the students were not exposed to any programming that specifically addressed alcohol abuse. The researchers surveyed students both in learning communities and in traditional residence halls concerning their behavior and attitudes towards academic and social issues. Using adapted questions from a nationally-normed survey, the researchers specifically asked students about their drinking patterns in both high school and college. Two hundred sixty-two surveys were used in the analyses. There were no statistical differences in drinking patterns in high school between LC participants and non-LC participants.

The results indicate that the learning communities positively affected student behavior in regard to drinking in college. “Students living in LCs were significantly less likely to drink at all than those in the comparison group, with over twice as many LC students as non-LC students saying they had consumed alcohol only once or never since coming to college (22.1% vs. 9.7%;  $p < .01$ )” (p. 139). Students in the LCs were also less likely to binge drink and suffered fewer adverse effects from others who drank, such as being harassed, having sleep interrupted, or experiencing unwanted sexual advances. The authors concluded that although alcohol abuse is a normative value for many college students, “residential LCs invite students into a positive alternative culture that is socially satisfying, academically supportive, and one that encourages healthy decisions” (p. 149).

Another area of student culture that appears to be affected by participation in a learning community is students’ openness to diversity. Using the responses from 502 first-year students from the College Student Experience Questionnaire (CSEQ), Pike

(2002) examined the impact of four living arrangements on students' perceptions of diversity at the end of their first-year at a midwestern research university. Specifically, he compared results from students: "(1) living off campus, (2) living in traditional residence halls (TRHs), (3) living in sponsored learning communities (SLCs), and (4) living in Freshman Interest Groups (FIG)" (p. 285). It should be noted that the students in SLCs simply lived together where as the students in FIGs lived together and were co-enrolled in common courses their first semester.

Using a path analysis to partition direct, indirect, and spurious effects, Pike analyzed 13 variables from the questionnaire. "Living on campus was positively related to openness to diversity, irrespective of whether the students lived in TRHs, SLCs, or FIGs" (p. 291). Furthermore, participating in a FIG had the greatest impact on students' perceptions of diversity. Additionally, the research found that "use of library, effort in courses, interaction with peers, and information exchanged in conversations" were positively related to openness to diversity (p.291). The path analysis suggested that the FIG directly and indirectly affected the quality and breath of peer relationships formed by FIG members. This is a significant finding since a common critique of learning communities is they create homogeneous, exclusive communities. This study contradicts that view and suggests that such communities help promote diversity by giving students the opportunity to form meaningful relationships with their fellow peers.

#### *Limitations of Current Research*

Despite the positive impact that learning communities appear to have on the undergraduate experience, there are several limitations within the literature that are important to highlight. These limitations not only provide a line of inquiry for further

research, but also provide practitioners with a list of concerns that must be addressed in order to advance learning communities as a viable mechanism for enhancing higher education.

First, as there are language differences with respect to how one defines learning communities. In this literature review, most of the studies focus on initiatives that provide a curricular component to the participant's experience. However, there are significant differences even among the initiatives that co-enroll students in common courses. For example, some of the programs simply utilize existing large lecture courses. Others utilize a first-year experience course to help integrate the concepts among the courses. Other learning communities designate specific courses exclusive to the program and the faculty among those courses try to integrate key concepts of all the courses within their individual course. As one can see, the degree of curricular integration within a learning community widely varies. To further complicate the issue, there is not a common language within the field of higher education in terms of the specific types of learning communities. For example, the Talent Achievement Program (TAP) program in Stassen's (2003) article appears to be the same type of program that many studies call a residential Freshman Interest Group (FIG). This language barrier limits the researcher's ability to compare programs and even conduct a review of the literature.

The language limitation also leads to another limitation. Given the degree of variance between institutional programs and the lack of a common language, most of the research in this area has been conducted at single institutions. While single-institution studies can provide insight into the benefits of learning communities at the institution in the study, caution must be taken in generalizing their results.

A third limitation is that all of the studies in this review have a sampling issue. Namely, the participants in the learning communities were not randomly assigned to the program; they chose to be involved. Therefore, comparing participants and non-participants is problematic. Many of the studies tried to address this issue by controlling for gender, race, academic major, and pre-college academic attributes. However, “it is possible that students who are most motivated to succeed take advantage of the LC opportunities and, as a result, retention and academic performance rates for LC’s are better because of individual student selection—not the program components themselves” (Stassen, 2003, p. 587).

Another major issue that is scarcely addressed in the literature is the cost of such programs. Knight (2003) attempted to conduct a cost-benefit analysis on the programs at Bowling Green State University. However, his analysis was based on an assumption that the programs are a determining factor for student recruitment and were generating new revenue for the institution. Knight’s assumption that students choose one institution over another due to learning communities was based on conversations with stakeholders. There is no empirical evidence in the literature that suggests that learning communities are a determining factor in choosing an institution of higher education. The issue of cost is problematic for both researchers and practitioners alike. For researchers, if there is an additional cost for participating, issues of self-selection and socioeconomic class may skew results. For practitioners, finding resources to fund such programs in a climate of rising tuition and declining state-aid is obviously one of the most immediate issues they face.

Finally, while the literature suggests that learning communities positively impact academic achievement, freshman to sophomore retention, and the student culture, little is known about degree attainment or the degree to which learning communities help students integrate their curricular experiences. The latter issue is particularly important given the differing structures of programs with integrative courses exclusive to learning community participants and programs that simply utilize existing courses. If learning communities are to be viewed as an emerging pedagogy for restructuring undergraduate education, more work will be needed in addressing these issues. Similarly, it is imperative that researchers go beyond examining the impact of participants versus non-participants. As Knight's (2003) study suggested, these programs are likely to have differing benefits for students based on the participants' gender, ethnicity, academic ability, socioeconomic class, and academic program. Researchers must not only control for these student characteristics, but must closely examine the experiences of diverse students if they wish to truly understand the impact of learning communities.

These limitations in the current research provide future researchers a line of inquiry for examination. Clearly, more work is needed in understanding how such programs benefit students from different ethnic, socioeconomic, and academic backgrounds. Furthermore, future researchers must strive to account for demographic and pre-college attributes when examining the relationship between participation in learning communities and persistence. As noted in this section, many studies have not considered such variables when examining persistence. The following section will review the latest literature on persistence and specifically look at student attributes that have been shown to affect persistence.

## Research on College Persistence

One of the driving forces behind the resurgence of learning communities is the belief that they can positively affect student persistence (Stassen, 2003). The following section will discuss recent research on student persistence in college with an emphasis on demographic and pre-college attributes that have been shown to affect student persistence.

Higher education has been intensely criticized over the past twenty years. Thus, it is not surprising that research on student retention and graduation has increased during the same time frame. “Driven initially by declines in student enrollment and, more recently, by an external push for institutional accountability, these studies have sought to provide insight into why some students persist and graduate and others do not” (Woodard, Mallory, & De Luca, 2001, p. 55). While many theories on student persistence have been posited, two widely accepted theories have emerged in the literature: John Bean’s (1983) Student Attrition Model and Vincent Tinto’s (1993) Student Integration Model.

Bean’s (1983) theory is based on psychological theories related to attrition in the workplace and attitude-behavior interactions. The model “presumes that behavioral intentions are shaped by a process whereby beliefs shape attitudes, and attitudes, in turn, influence behavioral intents” (Cabrera, Nora, & Castaneda, 1993, p. 125). A noted strength of this theory is that “factors external to the institution can play a significant role in affecting student attitudes and intentions and, subsequently, their decision to persist” (Woodard, Mallory, & De Luca, 2001, p. 55). In contrast, Tinto’s (1993) theory is based on sociological theories of suicide (Durkheim, 1951) and rites of passage (Van Gennep,

1960). “Tinto’s theory basically asserts that the matching between the student’s motivation and academic ability and the institution’s academic and social characteristics help shape two underlying commitments: commitment to an educational goal and commitment to remain with the institution” (Cabrera, Nora, & Castaneda, 1993, p. 124).

Although each theorist has supporters and critics, Cabrera, Nora, and Castaneda (1993) point out that there is much overlap between the two models.

Both models regard persistence as the result of a complex set of interactions over time. The two models also argue that precollege characteristics affect how well the student would subsequently adjust to the institution. Further, the two models argue that persistence is affected by the successful match between the student and the institution. A close examination of the two theories, for instance, apparently indicates that a high degree of overlap exists across the two theories in terms of organizational factors (courses and academic integration) and commitments to the institution (institutional commitment, institutional fit and quality) (Cabrera, Nora, & Castaneda, 1993, p. 125).

It is worth noting that many of the critics of the two theorists have incorporated principal assumptions from the two models in the process of proposing their own theory of persistence (Cabrera, Nora, & Castaneda, 1993; Braxton, Sullivan, & Johnson, 1997; Milem & Berger, 1997; Berger, & Braxton, 1998). Although each theorist has a different perspective on reasons for attrition, most agree that students’ demographic and pre-college attributes play an important role in persistence. The following section will examine the literature related on the relationship between these student background characteristics and college persistence.

### *Academic Preparedness*

A commonly used predictor of persistence and educational attainment of a baccalaureate degree is one’s high school grade point average (GPA) and standardized

test scores, such as the American College Test (ACT) or Scholastic Aptitude Test (SAT). Astin's (1993) seminal work using data obtained from multiple four-year institutions on over 38,000 students who attended college in the 1980's concluded that high school GPA and scores on the SAT respectively accounted for 9% and 7% of the variance in educational attainment. In a follow up study using an expansion of his data set, Astin (1997) found that the multiple correlation of the two variables on graduation was 0.336, accounting for 11.3% of the variance in degree attainment.

In a more recent study, St. John, Hu, Simmons, and Musoba (2001) found that students whose (SAT) scores were higher than the mean SAT scores of the peers in their high school were more likely to persist. Using a sample of freshmen enrolled in public colleges in Indiana from 1997-1998 and controlling for ethnicity, gender, age, income, and institutional type, the researchers used logistic regression to measure the impact of SAT scores on persistence from the fall to the winter term. "Each 100 points of differential in the SAT test increased the probability of persistence by 1.8 percentage points" (St. John, Hu, Simmons, & Musoba, 2001, p. 143). A further analysis indicated that a stronger predictor for persistence was whether or not a student's SAT score was higher than the mean score for his or her high school. "Achieving an SAT score higher than the average for the student's individual high school improved the probability of persistence by 4.6 percentage points, indicating that students whose SAT scores exceeded their high school peers were more likely to persist in college" (p. 146).

### *Ethnicity*

Compared to white students, African American, American Indian, and Hispanic students at public universities graduate at substantially lower rates (Peltier, Laden, &

Matranga, 1999). However, the research regarding the relationship between ethnicity and persistence is inconclusive.

Astin's (1997) previously mentioned work suggests that ethnicity plays a slight, but statistically significant influence on persistence. Adding ethnicity to his formula for predicting graduation within nine years resulted in an increase to the multiple correlation coefficient by .006. Taking into account entering academic ability, white students were more likely to graduate compared to African American, American Indian, and Hispanic students.

However, more recent studies contradict Astin's findings. In studying first-year retention of the 8,867 undergraduates who attended at Oregon State University from 1991-1996, Murtaugh, Burns, and Schuster (1999) found that after accounting for age, academic major, academic ability, and participation in an orientation class, Hispanic and Indian American students were just as likely to persist as white students. Furthermore, African American students were more likely to persist than white students. St. John, Hu, Simmons, and Musoba (2001) also found that ethnicity was not a statistically significant predictor of persistence in their before-mentioned study of the relationship between SAT scores and first-year retention.

### *Gender*

Like ethnicity, research on the relationship between gender and persistence is also inconclusive. Astin's (1997) previously mentioned work suggests that women are more likely to graduate within 9 years compared to men. Adding gender to his multivariate regression formula resulted in an increase to the multiple correlation coefficient by .007. More recent research though has suggested that gender is not a statistically significant

factor in predicting persistence (DeBerard, Spielman, & Julka, 2004; St. John, Hu, Simmons, & Musoba, 2001).

### *Academic Major*

Given the diversity of the curriculum among the various academic majors, it is not surprising that differences in persistence rates exist among academic fields. Astin (1997) suggests that “institutions enrolling many students in fields such as business, psychology, or other social sciences would be expected to have higher-than-expected retention rates, whereas those enrolling large numbers of students majoring in engineering would be expected to have lower-than-expected rates” (p. 654).

The issue of enrollment and attrition within math and engineering has been widely studied. “Undergraduate engineering enrollment declined from a high of 441,205 students in 1983 to 356,177 students in 1996, representing a 19 percent reduction” (Nsf.gov, ¶ 1). Of those who do enroll, an estimated 35% of first-year engineering students change their major before the start of their sophomore year (Seymour & Hewitt, 1997, p. 3). Studies have suggested that compared to other undergraduates, students majoring in science, math, and engineering face an unwelcoming classroom environment (Daempfle, 2003; Seymour & Hewitt, 1997) and consequently lose interest in their field of study. This research suggests that the academic major of a student may influence his or her decision to persist.

### *Social Class*

Over the past decade, tuition and fees at public 4-year institutions has risen 51 percent above the cost of inflation (Fischer, 2005). Thus, it is not surprising that

questions regarding the relationships among social class, financial aid, college choice, and persistence have emerged in the literature.

Recently, Paulsen and St. John (2002), using data from the Postsecondary Study Aid Survey of 1987 (NPSAS87), examined the relationship between social class and persistence while accounting for gender, ethnicity, mother's education, type of institution, college grades, and educational aspirations. While a major limitation in the study is clearly the dated data used in the study, their findings provide valuable insights into the complexities of social class and persistence. Not surprisingly, lower income students were less likely to persist. However, the researchers found some unexpected findings when they examined differences in persistence among poor, working-class, middle income, and upper-income students.

First, among the two lowest income groups, African American students were more likely to persist than any other ethnic group. Low-income Asian Americans were nearly 14 percentage points less likely to persist compared to other groups. "Although there is a widely held perception that Asian Americans are more likely to achieve academically than other ethnic groups, this generalization does not hold across income groups" (Paulsen & St. John, 2002, p. 215). Low-income women were also less likely to persist compared to low-income men. For middle and upper income students, the researchers found no differences in persistence between white and African-American students. The effects of academic performance on persistence also varied by income group. "Although receiving A grades had no effect on the persistence of elite-class students, poor students who earned A grades were more likely to persist" (Paulsen & St. John, 2002, p. 227). The researchers suggest that colleges interested in retaining low-

income students should insure that the students are provided experiences that at academically integrate them into the institution. In conclusion, they suggest that “in future research it is important to begin thinking about race with social class, rather than think of race and class as loose proxies for each other within broad, universalistic models” (Paulsen & St. John, 2002, p. 227).

### Conceptual Framework

The belief that FIGs can positively impact persistence is grounded in Tinto’s (1993) model of institutional departure and Astin’s (1993) concept of student involvement. This section will further explore the key concepts of the two models in relation to the theoretical underpinnings of FIGs.

Tinto’s model of institutional departure (1993) is based on the premise that students continually evaluate their intentions and commitment to an institution of higher education. Tinto defines intentions as the educational or occupational goals of an individual as related to his or her participation in a specific institution of higher education. Institutional commitment is the “degree to which one is willing to work toward the attainment of one’s goals within a given higher educational institution” (Tinto, 1993, p. 43). Tinto suggests that pre-college attributes such as ethnicity, gender, and entering academic achievements directly impact persistence. Furthermore, each indirectly affects persistence as one re-evaluates his or her goals, intentions, and commitment within the academic and social settings of the institution. It is the purposeful attempt to influence the social and academic systems that are of interest to those who advocate learning communities as a mechanism for student persistence.

The academic system “concerns itself almost entirely with the formal education of students” (Tinto, 1993, p. 106) and primarily occurs in the context of the classroom, but may also occur informally via interactions outside the classroom. The social system “centers about the daily life and personal needs of the various members of the institution, especially the students” (Tinto, 1993, p. 106) and may take place formally via student organizations or informally via peer to peer interactions. Tinto suggests that experiences within these distinct systems affect one’s decision to leave or persist.

Interactive experiences which further one’s social and intellectual integration are seen to enhance the likelihood that the individual will persist within the institution until degree completion, because of the impact integrative experiences have upon the continued reformulation of individual goals and commitments. Positive integration serves to raise one’s goals and strengthens one’s commitments both to the goals and to the institution within which they may be attained. Conversely, the model posits that, other things being equal, the lower the degree of one’s social and intellectual integration into the academic and social communities of the college, the greater the likelihood of departure. (Tinto, 1993, p. 116).

Tinto (1993) emphasizes that although “the academic and social experiences are distinct, they are mutually interdependent and reciprocal” (p. 119) and events in one arena may positively or negatively impact the other. “When the cultures of the academic and social systems are supportive of each other, then the two systems may work in consonance to reinforce integration in both the academic and social systems of the institution” (Tinto, 1993, p. 119). Tinto suggests that the converse is true as well. That is, if the academic and social systems are in conflict, “integration in one system of the college may constrain, or at least make more difficult, integration in the other” (Tinto, 1993, p. 119). This concept of integrative academic and social systems is one of the

philosophical foundations for using learning communities as a tool for student persistence.

Although Tinto's (1993) model of student departure has been widely accepted and used as a framework in over 170 dissertations (Braxton, Sullivan, & Johnson, 1997), some have questioned its applicability for today's diverse campuses with a changing student body. Specifically, Braxton, Sullivan, and Johnson (1997) suggested that academic and social integration is less important at two-year institutions where, compared to four-year residential campuses, student time on campus tends to be spent primarily in the classroom. Tierney (1992) suggested that Tinto's work was based on traditionally-aged students transitioning from high school. Furthermore, Tierney asserted that the model failed to account for cultural barriers faced by non-white students and suggested that the "rite of passage" for minority students may be vastly different from those in the mainstream. Based on these criticisms, Tinto's model is best suited for a four-year residential campus with a traditionally-aged student body. Furthermore, one should be cautious in applying the theory to students of color.

Astin's (1993) longitudinal research on involvement using data from the Cooperative Institutional Research Program (CIRP) also suggests that that involvement can have a positive impact on persistence. After nearly forty years of studying the impact of student involvement on the undergraduate experience, Astin (1996) concluded that three types of involvement are most influential on academic outcomes: involvement with academics, involvement with faculty, and involvement with peer groups. Inkelas and Weisman (2003) noted that these three concepts are core components of residential learning communities. "These elements are manifested through academic services (such

as tutoring, advising, and study groups), greater opportunities to interact with faculty on an informal basis, easier access to faculty, and structured programming that promotes sustained interaction with peers” (Inkelas & Weisman, 2003, p. 339).

Astin’s research (1993) is based on his input-environment-outcome (I-E-O) model. The model is based on the assumption that a researcher is “not in a position to interpret the observed correlation between the outcome and any environmental variable” (Astin, p. 95) without first controlling for the effects of the input variable.

Inputs refer to the characteristics of the characteristics of the student at the time of initial entry to the institution; environment refers to the various programs, policies, faculty, peers, and educational experiences to which the student is exposed; and outcomes refer to the student’s characteristics after exposure to the environment (p. 7).

Based on this model and Astin’s (1996) conclusions regarding involvement, one can hypothesize that learning communities founded on the concepts of student involvement with academics, faculty, and peers can create an environment that will positively influence desired undergraduate outcomes. However, as Inkelas and Wesiman (2003) noted, “research that draws conclusions on the impact of living-learning program participation on student outcomes, but fails to take into account the inherent distinctions among students before they even enter college, will most likely overestimate the effects of living-learning programs” (p. 340).

Tinto’s (1993) focus on academic and social integration and Astin’s (1993) research on involvement are key theoretical concepts behind the belief that learning communities can impact college persistence. FIGs are specifically designed to integrate students’ social and academic experiences by housing students with others who have common curricular courses and goals. Furthermore, as noted by Inkelas and Weisman

(2003), they are designed to promote involvement with academics, faculty, and peer groups. Furthermore, both Tinto's (1993) model of institutional departure and Astin's (1993) I-E-O model suggest that the entering characteristics of students must be accounted for when examining an outcome, in this case, persistence. Therefore, this study will utilize the two theories as a framework for examining the relationship between FIG participation and degree attainment.

#### Significance of this Study

This study will examine the relationship between participation in a residentially-based Freshman Interest Group (FIG) and attainment of a baccalaureate degree. As previously discussed, few studies have examined the relationship between learning community participation and persistence beyond the freshman to sophomore year. Many of the studies examining persistence of learning community participants have not accounted for entering academic characteristics of students. Fewer have accounted for differences in socioeconomic class. Using Astin's (1993) I-E-O model and accounting for pre-college characteristics that have been suggested by Tinto (1993) and Astin (1993) to affect persistence, this study will attempt to add to the body of literature on learning communities by examining their relationship to degree attainment. Furthermore, the study will specifically examine the relationship between learning community participation and degree attainment for lower ability and low-income students who, according to research, are less likely to persist than other students.

#### Summary

Higher education is experiencing tremendous challenges. Declining state aid and increasing enrollments have resulted in higher expectations for colleges and universities

by students, parents, and legislators alike. In many respects, the issues that faced our country in 1928 have only been magnified in the 21<sup>st</sup> century. At many institutions, large lectures are still the most common mechanism for delivering knowledge, and the great masses have only grown in size. Despite these challenges, there appears to be a renewed interest in curriculum reform and curriculum delivery via learning communities. Interestingly, 77 years after the *New York Times* introduced the public to Meiklejohn's Experimental College, it once again highlighted the potential benefits of such programs. In a feature story in April of 2005, the *New York Times* suggested that learning communities at large institutions can help "students find their niche at a state university" (Foderaro, 2005, p. 26).

This chapter examined the historical roots of learning communities, the factors that have influenced their resurgence at colleges and universities, and the benefits for students who participate in such initiatives. It then examined the current literature on persistence of college students with an emphasis on the pre-college attributes that affect retention and degree attainment. The chapter concluded with a discussion of the conceptual framework that will be used in this study and the contribution that this study will make to the body of literature on learning communities.

## Chapter 3

### RESEARCH METHOD

#### Introduction

Residentially-based learning communities have recently been touted as an innovative program in undergraduate education that will “offer measurable success in the form of higher retention rates and higher graduation rates” (USNews.com, ¶ 1). Recently, the *New York Times* claimed that learning communities at large institutions can help “students find their niche at a state university” (Foderaro, 2005, p. 26). Despite their popularity among administrators and their publicized effectiveness in the mainstream press, the research on the outcomes of such programs in helping students persist is limited. Therefore, the purpose of this study was to examine the relationship between Freshman Interest Group (FIG) participation and degree attainment while taking into account important pre-college characteristics as informed by the literature.

This chapter will discuss the methods used to examine the relationship between participation in a FIG and degree attainment. The research design, data source, population, collection method, variables, and proposed data analyses will be addressed.

#### Research Design

Using existing data provided by the institution, this quantitative study examined the relationship between participation in a residentially-based FIG and degree attainment at the institution by comparing differences in degree attainment between students who participated in a FIG and those who did not. As informed by the literature review, the researcher used demographic and pre-college attributes to account for student characteristics that may explain persistence.

## Data Source

The institution in the study is described by the Carnegie Foundation as a four-year, public institution with an enrollment of approximately 27,000 students whose majors were balanced between arts and science and professional fields (Carnegiefoundation.org, 2006). This comprehensive institution is labeled as “more selective” in that the test scores of students place the institution in the top 20% in the nation (Carnegiefoundation.org). At least 80% of the undergraduates are full-time, degree seeking students and at least 25% of the undergraduates live on campus (Carnegiefoundation.org).

## Population

The data set included all first-time college students who enrolled in at least 12 credit hours in the fall of 1998, 1999, 2000, and 2001, and lived on campus their first year. A first-time college student was defined as a student who enrolled at the institution for the first semester and did not transfer 24 or more credit hours from another institution. High school graduates enrolled at the institution for the first time who obtained 24 or more credits via Advanced Placement or dual-credit were considered first-time college students. This population was chosen for the study for two reasons: 1) Students in this population were eligible for participating in a FIG and 2) Given the time of this study, students who began college during 1998-2001 were likely to have had the opportunity to obtain a baccalaureate degree.

## Data Collection

Data related to demographic, pre-college academic characteristics, FIG participation, and degree attainment were obtained from the institution’s registrar. Data

related to financial aid were obtained from the Office of Institutional Research with the permission of the Director of Student Financial Aid. Through use of an individualized student identifier, the two data sets were merged using statistical software.

### Variables in the Study

As indicated in Chapter 2, research suggests that various demographic and pre-college characteristics can affect the persistence of college students (e.g., Astin, 1997; Tinto, 1993; Cabrera, Nora, & Castaneda, 1993; Bean, 1983). The following section will discuss the variables used in this study.

#### *Entering Academic Ability*

High school grade point average (GPA) and scores on standardized tests are strong predictors of persistence (St. John, Hu, Simmons, & Musoba, 2001; Astin, 1997). Institutional data from the registrar on students' GPAs from core high school classes and composite scores from the American College Test (ACT) were treated as continuous variables in this study to measure the entering academic ability of each student in the study. Core classes were defined by the institution to be courses in the social sciences, mathematics, English, foreign language, and sciences. Core classes did not include courses such as physical education, art, music, or vocational education.

#### *Ethnicity and Gender*

Studies have suggested that ethnicity and gender may affect persistence (Astin, 1997). Furthermore, recent studies on persistence have highlighted the importance of examining the affects of ethnicity and gender in relation to one another as well as socioeconomic class (Paulsen & St. John, 2002). Thus, both the ethnicity and gender of the students in the population were included in this study and treated as categorical

variables and dummy-coded as needed. The variables were self-reported by students on their admission's applications.

### *Initial Academic Major*

As suggested by Astin (1997), persistence rates among academic majors vary. Given that the FIGs at the institution in the study were predominantly oriented towards a specific major or career, the initial academic major of the students was an important demographic variable in this study for two reasons. First, it was possible that compared to the general student body, the FIGs program serves a disproportionate number of majors with higher or lower persistence rates. Second, it was also possible that some types of FIGs were more effective in academically socializing certain types of majors and, therefore, one might find differences in persistence rates between FIG and non-FIG participants of some majors, but not others.

The institution's registrar provided the initial academic major of the participants. If a student was a double major, only their primary major was used for the study. Given that the institution in the study offers over 80 undergraduate majors for first-year students, academic majors were clustered with other similar degree programs based upon their commonality of first-year curricula. These fields were dummy-coded as needed.

### *Social Class*

As discussed in the literature review, social class may have a profound effect on persistence, particularly when examined in relation to gender and ethnicity (Paulsen & St. John, 2002). With permission from the Office of Financial Aid, data containing the entering students' parents' adjusted gross incomes (AGI) were shared by the Office of Institutional Research. These data were obtained through the Free Application for Federal

Student Aid (FAFSA). Approximately one third of all students at the institution in the study did not complete this form. Therefore, the parents' AGI was dummy-coded as a categorical variable based upon an initial descriptive analysis into subcategories of income (i.e. low, lower middle, middle, upper middle, high, missing).

### *FIG Participation*

The program in the study was open to all entering first-year students. Students were mailed information about the program when they were admitted to the institution. Students were given the option to select their FIG preferences in the spring preceding their first semester. Students were placed in a FIG based upon their preferences and their initial application date for housing. Although space was limited, most entering students who wanted to participate were accommodated. A common reason students did not participate is the desire to live with a specific roommate. If two students wished to participate in a FIG and live with each other, both had participate in the same FIG. Given that most FIGs were centered-around an academic major, roommates with different academic interests typically chose between living together or participating in a FIG. Participants of the program were coded in the institution's academic database. For the purposes of this study, FIG participation was simply a dichotomous variable. Each student in the data was dummy-coded as either a FIG participant or a non-participant.

### *Degree Attainment*

As indicated in Chapter 2, one of the primary forces behind the resurgence of learning communities is the belief that they improve student persistence (Stassen, 2003). Yet, there is little research that examines the impact of such programs on persistence beyond the first year. This study attempted to contribute to the literature by using

baccalaureate degree attainment as the dependent variable. The database used in this study provided the year the student entered college, a dichotomous variable indicating if he or she graduated, and a field indicating the term that he or she graduated.

### Analysis of the Data

As indicated in the first chapter, this study examined three research questions relating to participation in a FIG and degree attainment. In addition to the provision of descriptive statistics, logistic regression was used to examine all three research questions. This section will first provide a general discussion on logistic regression. The section will then thoroughly examine the specific techniques that were used to analyze each question.

#### *Logistic Regression*

Given the advances and availability of statistical software such as Software Package for Social Sciences (SPSS), logistic regression has become a statistical method commonly used to study college student persistence (Deay & Astin, 1993). This study specifically used logistic regression from SPSS version 14.0/2006. Logistic regression “allows one to predict a discrete outcome such as group membership from a set of variables that may be continuous, discrete, dichotomous, or a mix” (Tabachnick & Fidell, 2001, p. 517). The dependent variable may have two or more outcomes. Furthermore, “logistic regression has no assumptions about the distributions of the predictor variables; in logistic regression, the predictors do not have to be normally distributed, linearly related, or of equal variance within each group” (Tabachnick & Fidell, 2001, p. 517). Given that this inquiry included both continuous and categorical pre-college variables to examine the discrete outcome of degree attainment, and that it is likely that some of the

pre-college variables were not normally distributed, logistic regression was an ideal statistical method for this study.

*Question 1: Differences in Degree Attainment*

The first research question was, “Controlling for demographic and pre-college attributes, what variables explain degree attainment between students who participate in a FIG and those who do not?” This question was examined by using SPSS to conduct a logistic regression that used the pre-college characteristics and FIG participation as independent predictor variables and the dichotomous variable of degree attainment as the dependent variable. An analysis of the results indicated if the independent variables created a model that predicted degree attainment. The analysis also indicated the independent variables (e.g., FIG participation, ACT composite score, high school GPA, gender, ethnicity, parental AGI, academic major), that were statistically significant in predicting degree attainment, as well as the strength of each variable in association with degree attainment.

*Question 2: Time to Completion*

The second research question was, “Controlling for demographic and pre-college attributes, what variables explain the time to completion between students who participate in a FIG and those that do not?” This question was also examined using logistic regression. However, in this case, the dichotomous dependent variable was four-year degree attainment.

Using the data fields of the first semester the student enrolled and the term he or she graduated, a new variable was created and coded as “four-year graduate.” For example, a student who entered in August of 1998 and graduated in May of 2002 was

coded as graduating in four years. All other students will be coded as not graduating in four-years. For the purposes of this study, a student who graduated in the summer of his or her fourth year will be treated as a graduate within four years.

Using the newly created variable “four-year graduate” as the dependent variable, the researcher conducted a logistic regression using all the pre-college variables and students in the dataset. An analysis of the results indicated if the independent variables created a model that predicted degree attainment within four years. The analysis also indicated which independent variables, including FIG participation, were statistically significant in predicting the four-year degree attainment, as well as the strength of each variable in association with the dependent variable.

### *Question 3: At risk students*

The final research question was, “Controlling for demographic and pre-college attributes, what variables explain differences in degree attainment for lower income or lower ability students who participate in a FIG and those who do not?” As indicated by the literature review, these students were considered to be “at risk” for attrition. This question was examined similarly to the method employed in answering the first question by selecting students with lower parental AGI or lower high school GPA. To examine this question, the researcher used descriptive statistics to define “lower income” and “lower ability” with the goal of identifying approximately a quartile of the sample considered most “at risk.” The researcher chose to use GPA rather than ACT scores as an indicator since it is considered a stronger predictor of persistence (Astin, 1993). By selecting lower income, lower ability students and re-rerunning the logistic regression used in examining the first question, the researcher examined the differences and

predictive power of the pre-college characteristics in relation to degree attainment for students considered “at-risk.”

### Summary

Although learning communities have become a typical program to promote college persistence, research on their effectiveness is limited. Furthermore, many of the published studies have failed to adequately account for pre-college characteristics known to affect persistence. Using existing data provided by the institution in this study, this research used logistic regression to account for pre-college variables and examined the relationship between participation in a residentially-based FIG and degree attainment at a research-intensive institution by comparing differences in degree attainment between students who participated in a FIG and those who did not. Using institutional data to compute the time it takes to complete a baccalaureate degree, a second logistic regression examined the relationship between FIG participation and four-year degree completion. Finally, the researcher conducted a regression in which only subgroups of students were selected so that he could examine in the relationship between FIG participation and degree attainment for students whom research has indicated are not as likely to persist.

## Chapter 4

### RESULTS

#### Introduction

The purpose of this study was to examine the differences in graduation rates between FIG and non-FIG students at a public, residential institution in the Midwest, while controlling for gender, ethnicity, socioeconomic class, initial academic major, and entering academic ability. In addition to exploring overall differences in degree attainment, the study also sought to study any differences in the time to completion between FIG and non-FIG participants, and differences in degree attainment between FIG and non-FIG students who were deemed to be less likely to persist based upon their family income or high school grade point average.

This chapter will first provide descriptive statistics of the demographic characteristics of the students in the study. This chapter will then discuss the results of the analysis for the three research questions and will conclude with a summary of the results.

#### Descriptive Statistics

Data obtained from the institution was imported into SPSS version 14.0 (2006). The data set obtained from the office of institutional research contained 13,541 on-campus students. Of the 13,541 students, 3800 or 28.1% participated in a FIG. The following section will provide descriptive statistics of the entire data set with an emphasis on the independent variables that were used in the logistic regression model.

#### *Ethnicity*

Based upon self-reported data, students were assigned to one of five following ethnic groups: Caucasian (11,483 students or 88.1% of the sample), African American

(935 students or 7.2% of the entire sample), Asian (353 students or 2.7% of the entire sample), Hispanic (182 students or 1.4% of the entire sample), and American Indian (75 students 0.6% of the entire sample). Five hundred thirteen students did not report their ethnicity and were labeled as “missing”. The following is the ethnic composition of the FIG group: 3,297 students or 89.9% were Caucasian, 194 students or 5.3% were African American, 111 students or 3.0% were Asian, 48 students or 1.3% were Hispanic, and 18 students or 0.5% were American Indian. In other words, compared to the general student population, students in a FIG were more likely to be Caucasian or Asian, and less like to be African American, Hispanic, or American Indian.

#### *Initial Academic Major*

Initially students were assigned to 1 of 13 academic majors based upon the organizational structure of the academic units at institution. Based upon the commonality of the various curricula and an initial comparison of graduation rates, groups were combined resulting in four categories for the initial academic major. The following is the composition of majors in the overall sample: 1,194 students or 8.8% majored in agriculture, natural resources, or human and environmental sciences; 4,017 students or 29.7% majored in a field in arts and sciences, education or were undecided; 3,781 students or 27.9% majored in the sciences, math, engineering, or a pre-health related field; and 4,549 students or 33% majored in business or journalism. As a clarification, arts and sciences consisted of all non-scientific majors in the College of Arts and Sciences such as psychology, sociology, history, humanities, and fine arts. The composition of initial academic majors of FIG students were: 283 or 7.4% in agriculture, natural resources, or human and environmental sciences; 964 or 25.4% in arts and

sciences, education or undecided; 1073 or 28.2% in sciences, math, engineering, or a pre-health related field; and 1,480 or 38.9% in journalism or business. In other words, FIG students were more likely to major in Journalism and less likely to major in agriculture, natural resources, human and environmental sciences, arts and sciences, education, or undeclared.

### *Gender*

Based upon the institutional data, students were coded as being either male or female. Sixty-one percent or 8,207 of the students were female and 39% or 5,334 students were male. Of the FIG group, 61.5% or 2,336 were female and 38.5% or 1,464 were male. One factor in the disproportionate number of women versus men is that the institution in the study allowed fraternity men to live off campus their first year and this sample only contained students who lived on campus their first year.

### *Parental Income*

As discussed in the previous chapter, the data set contained income data as reported from the Free Application for Federal Student Aid (FAFSA). Since the FAFSA is a voluntary form, only 8565 of the 13541 student records contained data related to parental adjusted gross income. Parental income was initially recoded from a continuous to a categorical variable with 13 categories of the students' parents' adjusted gross income ranging from less than \$8000 to more than \$80,000, with one category for students with missing data. An initial analysis found a linear relationship between parental income and degree completion with students from lower income parents having the lowest completion rates and students from higher income families having the highest completion rates. Furthermore, students who did not complete the FAFSA graduated at a

rate most similar to students from the two highest income groups. Therefore, the variable was recoded again from a categorical to an ordinal level with six levels as indicated in Table 1. As indicated in the table, students participating in a FIG were more likely to come from middle and upper-income families compared to students who did not participate in a FIG.

Table 1.

Parental Income by Participation in a FIG

Parent's Adjusted Gross Income	N	No FIG	FIG	Total
\$16,000 or less	Count	411	101	512
	% within FIG	4.2%	2.7%	3.8%
\$16,001-\$32,000	Count	820	262	1,082
	% within FIG	8.4%	6.9%	8.0%
\$32,001-\$48,000	Count	938	376	1,314
	% within FIG	9.6%	9.9%	9.7%
\$48,001-\$64,000	Count	1,003	420	1,423
	% within FIG	10.3%	11.1%	10.5%
\$64,001-\$80,000	Count	1,006	408	1,414
	% within FIG	10.3%	10.7%	10.4%
Greater than \$80,000 or no information	Count	5,563	2,233	7,796
	% within FIG	57.1%	58.8%	57.6%
Total	Count	9,741	3,800	13,541
	% of Total	71.9%	28.1%	100.0%

### *Entering Ability*

To further describe the profile characteristics of the students in the study, an analysis of variance (ANOVA) was conducted to look at mean differences between FIG and non-FIG students in relation to high school GPA and ACT Composite score. The mean high school GPA for FIG students was 3.42 with a standard deviation of 0.619. The mean high school GPA for students not in a FIG was 3.32. Similarly, the mean ACT Composite score for FIG students was 26.5 with a standard deviation of 3.42. The mean ACT Composite score for non-FIG students was 25.5. An ANOVA indicated that these differences were statistically significant at the 0.001 level.

### Research Question 1

The first research question is, “Controlling for demographic and pre-college attributes, what variables explain degree attainment between students who participate in a FIG and those who do not?” As indicated in the previous chapter, this question was examined by using SPSS. Using logistic regression, the entire data set of 13,541 students was analyzed. Four categorical variables (ethnicity, initial academic major, gender, and FIG participation), one ordinal variable (parental adjusted gross income) and two continuous variables (high school GPA and ACT Composite score) were used to explain the dependent variable, degree attainment. Prior to the regression, tolerance and variance inflation factors were calculated to insure that the variables were linearly independent.

For the regression analysis, ethnicity was coded as follows: American Indian as ethnic 1; Asian or Pacific Islander as ethnic 2; African American, non-Hispanic as ethnic 3; and Hispanic as ethnic 4. Caucasian students served as the comparison group. Similarly, students whose initial academic major were agriculture, natural resources, or

environmental sciences were coded as major 1; arts and sciences, undecided, or education students were coded as major 2; sciences, math, and pre-health students were coded as major 3; journalism students were used as the comparative group. For the dichotomous categorical variables, females and students who participated in a FIG were coded as reference groups, gender (1) and FIG (1) respectively, with male and non-FIG students serving as the comparison groups. For the dependent variable, degree attainment, students who graduated were coded as (1) and those who did not were coded as (0). Overall, 64.4% of the students earned a baccalaureate degree.

To test the goodness-of-fit, a Hosmer-Lemeshow statistic, which groups observations into percentiles, was conducted and resulted in a non-significant chi-square at the .05 level. This indicates that the model is appropriate for predicting degree attainment (Tabachnick & Fidell, 2001). The model correctly predicted 90.1% of the graduates, but only 29.3% of the non-graduates. Overall, 68.4% of students were correctly classified.

Table 2 provides a summary of the Wald Statistic test, which measures the contribution of the individual independent variables in predicting degree attainment (Tabachnick & Fidell, 2001). As indicated in the table, all of the predictors, with the exception of ethnicity, were statistically significant in predicting degree attainment. Exp (B) is the odds ratio for each of the contributing predictors. An odds ratio greater than 1 that is statistically significant indicates a positive relationship between the independent and dependent variables. The greater the odds ratio is from 1, the stronger the effect the individual independent variable has on the dependent variable. Likewise, an odds ratio

less than 1 that is statistically significant indicates an inverse relationship between the independent and dependent variables.

As indicated in the table, having higher parental income, being female, participating in a FIG, having higher ACT Composite scores, and having higher high school grades were positively associated with degree attainment. Journalism students were most likely to graduate followed by arts and sciences, undecided, and education students. Students whose initial major was science, math, or pre-health were least likely to graduate. There were no statistical differences between the null group, journalism, and major 1 (agriculture, natural resources, and environmental sciences).

Interpreting the odds ratio in logistic regression is more complex than interpreting the effect size (beta weights) in linear regression. “Unlike linear regression, where the rate of change is constant, the rate of change of predicted probabilities [in logistic regression] varies, depending on the location of the starting point on X” (Pedhazur, 1997 p. 750). One method for interpreting an odds ratio is by expressing it as a percent increase in probability for a given subject. This can be done by multiplying the original odds by the odds ratio, and then using the result to calculate the new probability (Pedhazur, 1997). For example, if a student at the institution in this study were predicted to have a 40% chance of obtaining a baccalaureate degree, his or her odds would be expressed as (.4/.6), where the student had a 40% chance of graduating and a 60% chance of not graduating. To calculate the effect of participating in a FIG, one would multiply (.4/.6) by the odds ratio (1.184), which results in 0.7893. Then, the researcher would solve for x, the new probability by solving the equation  $0.7893 = 1/(1-x)$ . In this case, the estimated effect of participating in a FIG would increase the student’s odds of graduating from 40% to

44.1%. Likewise, a student who was predicted to have an 80% chance of graduating would be predicted to have an 82.6% of graduating if he or she participated in a FIG. As this example demonstrates, the change in percent varies depending on his or her original probability of graduation. However, the overall results indicate that participating in a FIG increases the likelihood that one will be predicted to graduated.

Table 2.

Results of Logistic Regression for Degree Attainment on Pre-College Variables and FIG

## Participation

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Parental Income	0.138	0.013	117.218	1	0.000	1.148
Major <sup>a</sup>			71.954	3	0.000	
Agriculture/ Natural Resources/Environmental Sciences	-0.117	0.075	2.414	1	0.120	0.890
Arts and sciences/Undecided/Education	-0.277	0.050	31.048	1	0.000	0.758
Sciences/Math/Pre-health	-0.415	0.051	65.486	1	0.000	0.660
Female	0.228	0.042	29.937	1	0.000	1.256
Participated in a FIG	0.169	0.045	14.316	1	0.000	1.184
ACTCOMP	0.034	0.006	29.407	1	0.000	1.034
HSGPA	1.052	0.045	541.406	1	0.000	2.863
Ethnicity <sup>b</sup>			3.511	4	0.476	
American Indian	0.079	0.263	0.090	1	0.764	1.082
Asian/Pacific Islander	0.054	0.123	0.197	1	0.658	1.056
African American	0.093	0.079	1.391	1	0.238	1.097
Hispanic	-0.211	0.161	1.714	1	0.190	0.810
Constant	-4.441	0.194	525.704	1	0.000	0.012

<sup>a</sup>Reference group for Major=Journalism/Business<sup>b</sup>Reference group for Ethnicity=Caucasian

## Research Question 2

The second research question is, “Controlling for demographic and pre-college attributes, what variables explain the time to completion between students who participate in a FIG and those that do not?” Using data provided by the institution, a new variable, “graduated in four years,” was created. This dichotomous variable was defined by whether or not a student earned a baccalaureate degree by the end of the summer term four years after he or she initially enrolled. Using individualized records, each student was coded “1” if they met this criterion and “0” if they did not. In other words, students who graduated after four years and those who have not graduated were coded as “0.”

For the regression analysis, ethnicity was coded as follows: American Indian as ethnic 1; Asian or Pacific Islander as ethnic 2; African American, non-Hispanic as ethnic 3; and Hispanic as ethnic 4. Caucasian students served as the comparison group. Similarly, students whose initial academic major were agriculture, natural resources, or environmental sciences were coded as major 1; arts and sciences, undecided, or education students were coded as major 2; sciences, math, and pre-health students were coded as major 3; journalism students were used as the comparative group. For the dichotomous categorical variables, females and students who participated in a FIG were coded as reference groups, gender (1) and FIG (1) respectively, with male and non-FIG students serving as the comparison groups. Overall, 40.9% of the students earned a baccalaureate degree within four years.

To test the goodness-of-fit, a Hosmer-Lemeshow statistic was conducted which resulted in a non-significant chi-square at the .05 level. This indicates that the model is appropriate for explaining degree attainment (Tabachnick & Fidell, 2001). The model

correctly classified 79.5% of the students who graduated within four year and 46.7% of the students who did not graduate within four years. Overall, 66.1% of students were correctly classified.

Table 3 provides a summary of the Wald Statistic test. As indicated in the table, all of the predictors were statistically significant in predicting degree attainment. However, within ethnicity, only Hispanic students were significantly different from the comparison Caucasian group. As indicated by the odds ratios, having higher parental income, being female, participating in a FIG, having higher ACT Composite scores, and having higher high school grades were positively associated with graduating within four years. The odds ratio for participating in a FIG was 1.156. As noted in the previous discussion regarding odds ratio, this could be interpreted as a student who was predicted to have a 50% likelihood of graduating within four years would have a 53.6% chance if he or she participated in a FIG. Journalism students were most likely to earn a baccalaureate degree within four years followed by major 1 (agriculture, natural resources, and environmental sciences) and then by group 2 (arts and sciences, undecided, and education students). Students whose initial major was science, math, or pre-health were least-likely to graduate within four years.

Table 3.

Results of Logistic Regression for Four-Year Degree Attainment on Pre-College

Variables and FIG Participation

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Parental Income	0.150	0.013	133.140	1	0.000	1.162
Major <sup>a</sup>			263.511	3	0.000	
Agriculture/ Natural Resources/Environmental Sciences	-0.162	0.072	5.076	1	0.024	0.850
Arts and sciences/Undecided/Education	-0.383	0.048	63.021	1	0.000	0.682
Sciences/Math/Pre-health	-0.802	0.050	253.517	1	0.000	0.448
Female	0.486	0.041	137.452	1	0.000	1.625
Participated in a FIG	0.145	0.043	11.579	1	0.001	1.156
ACTCOMP	0.042	0.006	46.385	1	0.000	1.043
HSGPA	1.081	0.049	496.955	1	0.000	2.948
Ethnicity <sup>b</sup>			8.742	4	0.068	
American Indian	-0.064	0.258	0.062	1	0.803	0.938
Asian/Pacific Islander	0.136	0.120	1.297	1	0.255	1.146
African American	0.047	0.083	0.317	1	0.573	1.048
Hispanic	-0.463	0.176	6.876	1	0.009	0.630
Constant	-5.751	0.200	829.049	1	0.000	0.003

<sup>a</sup>Reference group for Major=Journalism/Business<sup>b</sup>Reference group for Ethnicity=Caucasian

### Research Question 3

The third research question is, “Controlling for demographic and pre-college attributes, what variables explain differences in degree attainment for lower income or lower ability students who participate in a FIG and those who do not?”

Using logistic regression using the same independent and dependent variables used in first research question, this question was examined using only students whose parents’ adjusted gross income was \$48,000 or less or students whose high school grade point average was below a 2.75 were included. These criteria were used based upon initial analyses of graduates by income and entering ability and a desire to look at the quartile of students in the sample considered to be at risk as informed by the literature. Using these criteria, 3811 students were included in the analysis.

Four categorical variables (ethnicity, initial academic major, gender, and FIG participation), one ordinal variable (parental adjusted gross income) and two continuous variables (high school GPA and ACT Composite score) were used to explain the dependent variable, degree attainment.

For the logistic regression analysis, ethnicity was coded as follows: American Indian as ethnic 1; Asian or Pacific Islander as ethnic 2; African American, non-Hispanic as ethnic 3; and Hispanic as ethnic 4. Caucasian students served as the comparison group. Similarly, students whose initial academic major were agriculture, natural resources, or environmental sciences were coded as major 1; arts and sciences, undecided, or education students were coded as major 2; sciences, math, and pre-health students were coded as major 3; journalism students were used as the comparative group. For the dichotomous categorical variables, females and students who participated in a FIG were coded as

reference groups, gender (1) and FIG (1) respectively, with male and non-FIG students serving as the comparison groups. For the dependent variable, degree attainment, students who graduated were coded as (1) and those who did not were coded as (0). Overall, 51.2% of the students earned a baccalaureate degree.

To test the goodness-of-fit, a Hosmer-Lemeshow statistic was conducted which resulted in a non-significant chi-square at the .05 level. This indicates that the model is appropriate for predicting degree attainment (Tabachnick & Fidell, 2001). The model correctly predicted 66.1% of the graduates and 64.1% of the non-graduates. Overall, 65.2% of students were correctly classified.

Table 4 provides a summary of the Wald Statistic test. As indicated in the table, parental income, initial academic major, gender, high school GPA, and FIG participation were statistically significant in predicting degree attainment. Within initial academic major, there were no statistical differences between the null group, journalism, and major 1 (agriculture, natural resources, and environmental sciences). Neither ethnicity nor ACT Composite score were statistically significant at the .05 level. As indicated by the odds ratio (Exp (B)) in Table 4, having higher parental income, being female, participating in a FIG, and having higher high school grades were positively associated with degree attainment. Journalism students were most likely to graduate followed by arts and sciences, undecided, and education students. Students whose initial major was science, math, or pre-health were least-likely to graduate. The odds ratio for participating in a FIG was 1.363. This could be interpreted as a student who was predicted to have a 50% likelihood of graduating would have a 57.7% chance if he or she participated in a FIG.

Table 4.

Results of Logistic Regression for Degree Attainment of “At risk” Students on Pre-College Variables and FIG Participation

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Parental Income	0.056	0.026	4.634	1	0.031	1.058
Major <sup>a</sup>			22.378	3	0.000	
Agriculture/ Natural Resources/Environmental Sciences	0.048	0.124	0.150	1	0.699	1.049
Arts and sciences/Undecided/Education	-0.291	0.087	11.216	1	0.001	0.747
Sciences/Math/Pre-health	-0.347	0.093	14.084	1	0.000	0.707
Female	0.232	0.073	10.173	1	0.001	1.262
Participated in a FIG	0.310	0.081	14.608	1	0.000	1.363
ACTCOMP	0.021	0.011	3.819	1	0.051	1.021
HSGPA	1.038	0.081	165.161	1	0.000	2.824
Ethnicity <sup>b</sup>			4.225	4	0.376	
American Indian	0.149	0.452	0.109	1	0.742	1.161
Asian/Pacific Islander	0.149	0.225	0.443	1	0.505	1.161
African American	-0.226	0.127	3.148	1	0.076	0.798
Hispanic	-0.212	0.321	0.437	1	0.509	0.809
Constant	-3.915	0.335	136.169	1	0.000	0.020

<sup>a</sup>Reference group for Major=Journalism/Business

<sup>b</sup>Reference group for Ethnicity=Caucasian

## Summary

The purpose of this chapter was to present the results of the study, as described in Chapter 3. First, descriptive statistics were provided to give the reader an overview of the characteristics of the student in the dataset, including differences in pre-college attributes between students who participated in a FIG and those who did not. The chapter then discussed the results of the three research questions. For all three questions, participating in a FIG was a statistically significant predictor for the classification model with odds ratios of 1.184 for degree attainment, 1.156 for four-year degree attainment, and 1.363 for degree attainment of at risk students, as defined by lower high school grade point average or parental adjusted gross income of less than \$48,000. These results will be discussed in Chapter 5.

## Chapter 5

### DISCUSSION OF RESULTS

#### Introduction

This study, conducted at a public, residential Midwestern research-intensive institution, examined differences in graduation rates between students who participated in a Freshman Interest Group (FIG) and those who did not. This chapter will discuss the results presented in Chapter 4. The first section will address the influences of the pre-college variables on degree attainment in relation to previous research and theories on persistence, as discussed in Chapter 2. An in-depth discussion of the three research questions and the limitations of the study will follow. The chapter will conclude with a discussion of the implications for both future research and policy.

#### Summary of Study

Learning communities have been widely-touted as a program to increase persistence and graduation rates (USNews.com, ¶ 1). FIGs, a model of a learning community, is specifically designed to integrate students curricular and co-curricular experiences by placing students in peer reference groups in which students live with and take common courses with students with similar academic interests. Using institutional data, the researcher examined the influence of participating in a FIG in predicting the degree attainment of first-time college students who entered a public institution in the Midwest in the fall of 1998, 1999, 2000, and 2001. Accounting for students' gender, ethnicity, socioeconomic class, initial academic major, entering academic ability, and FIG participation, the researcher used logistic regression to create models for predicting

degree attainment, four-year degree attainment, and degree attainment for students considered “at risk” based upon family income and high school scholastic achievement.

### Discussion of Results

This study was grounded in Astin’s (1993) concept of involvement and I-E-O framework, as well as Tinto’s (1993) theory of student departure. Specifically, the study considered pre-college characteristics (gender, ethnicity, parental income, high school grade point average, and ACT Composite score) as inputs used to predict the outcome, degree attainment. In this study, participation in a Freshman Interest Group (FIG) is considered as the environment. Tinto (1993) hypothesized that “interactive experiences which further one’s social and intellectual integration are seen to enhance the likelihood that the individual will persist within the institution until degree completion” (p. 116). Therefore, since FIGs are specifically designed to integrate the social and intellectual student experiences, one could hypothesize that after controlling for entering abilities, students who participated in a FIG should have a greater probability of earning a baccalaureate degree.

As discussed in Chapter 2, the pre-college variables were chosen based upon previous research which suggested that academic preparedness, ethnicity, gender, initial academic major, and parental income were significant predictors of persistence. The following sections will first discuss the extent to which each of the pre-college variables were significant in predicting degree attainment, and will then more thoroughly discuss the influence of FIG participation with regards to the three research questions.

### *Academic Preparedness*

As discussed in Chapter 2, literature suggests that one of the strongest predictors of persistence is entering academic ability. For example, Astin (1997) found that high school GPA and SAT scores accounted for 11.3% of the variance of degree attainment.

In this study, high school GPA was statistically significant and the most influential predictor of degree attainment in all three classification models. The odds ratio associated with high school GPA for the three questions were 2.86, 2.95, and 2.82, respectively. ACT Composite score was a statistically significant predictor for the first and second research question, but failed to reach the level of statistical significance for predicting degree attainment for lower ability or lower income students. Additionally, ACT Composite score was a weak contributor to the regression model. These findings are consistent with Stassen's (2003) study of the impact of learning communities on first-year retention. Stassen found SAT scores to be trivial predictors and high school GPA to be the most influential pre-college predictor for first-year retention with an odds ratio of 2.51.

The findings in this study related to academic preparedness suggest that high school achievement is the strongest predictor of degree attainment at the institution in the study. It also suggests that standardized test scores, while statistically significant, are poor predictors of degree attainment.

### *Ethnicity*

As previously discussed, research examining the relationship between ethnicity and persistence is mixed. Astin (1997) found slight advantages for Caucasian students in comparison to Hispanic, African American, and American Indian students. However,

more recent studies did not find differences in persistence among ethnic groups after accounting for other variables (Murtaugh, Burns, & Schuster, 1999; St. John, Hu, Simmons, & Musoba, 2001). In this study, ethnicity was not a significant predictor for any of the three questions, with the exception of four-year graduation of Hispanic students. Hispanic students were significantly less likely to graduate in 4 years compared to white students. This is an interesting finding considering that there were no statistical differences between Hispanic and white students in terms of overall degree attainment. However, given that only 1.3% of the entire sample was Hispanic, one should be extremely cautious in generalizing this finding. With the exception of this finding, ethnicity was not a significant predictor of degree attainment.

#### *Gender*

Like ethnicity, research on the relationship between gender and persistence is inconclusive. Astin (1997) found slight advantages for women while others found no statistical differences between men and women (DeBerard, Spielman, & Julka, 2004; St. John, Hu, Simmons, & Musoba, 2001). However, in this study, gender was a statistically significant predictor. Being female was a strong predictor of overall degree attainment, degree attainment in four years, and degree attainment for lower ability and lower income students. Stassen (2003) found similar results for students who were required to withdraw due to academic dismissal, but found no overall differences between the retention of first-year women and men. Perhaps most intriguing is the difference in odds ratios between overall degree attainment (1.256) and degree attainment in four years (1.625). This would appear to indicate that men are much more likely to take five or more years to graduate compared to women.

### *Initial Academic Major*

In all three of the models, initial academic major was a statistically significant and moderate indicator of persistence. In all three studies, students whose initial major were in the sciences, math, and engineering were least likely to obtain a degree. This finding is consistent with other research in the literature (Astin, 1997; Stassen, 2003, Seymour & Hewitt, 1997). Students whose initial majors were journalism, business, agriculture, natural resources, or environmental science were predicted to have higher graduation rates compared to students whose initial majors was arts and sciences, education, or undecided.

This finding is relevant for two reasons. First, options were available for students to participate in a FIG across all four of the academic fields. Therefore, while it is likely that the FIG students were not normally distributed across all four fields, there were opportunities for students to participate in a FIG, including interest groups for undecided students. Second, although initial major is not a direct measurement of commitment, individual commitments are related to academic majors. Tinto (1993) suggests that the “higher the level of one’s educational or occupational goals, the greater the likelihood of college completion” (p.38) and that individuals whose occupations are closely tied to a career are likely to have a greater commitments to persist. Based on this theory, it is not surprising that journalism and business majors were most likely to persist given the occupational nature of their fields of study.

### *Social Class*

Consistent with work by Paulsen and St. John (2002), parental adjusted gross income was a statistically significant predictor in examining all three of the questions. It

was moderately strong for predicting overall degree attainment and four-year degree attainment. While statistically significant, it was a trivial predictor of degree attainment for low income or lower ability students. This could be an indication that the impact of parental income is not a linear relationship. That is, the social, cultural, or economic capital that may be associated with parental adjusted gross income (AGI) and leads to persistence is gained by association in the upper-middle and upper classes, and differences within the lower and lower-middle classes, while statistically significant, are not strong predictors.

*Question 1: FIG Participating and Degree Attainment*

The first research question was, “Controlling for demographic and pre-college attributes, what variables explain degree attainment between students who participate in a FIG and those who do not?” Logistic regression was used to examine this question and, after controlling for the pre-college characteristics (i.e., gender, ethnicity, parental income, initial academic major, entering academic ability), FIG students were more likely to earn a baccalaureate degree than non-FIG students. The FIG’s odds ratio of 1.18 was greater than the odds ratio for both parental income and ACT Composite score, but lower than gender and high school GPA. Since few studies have specifically examined the relationship between learning community participation and degree attainment, it is difficult to compare this finding with other research. The closest comparison is perhaps Stassen’s (2003) study of first-year persistence of learning community students. In Stassen’s study, the odds ratios associated with the non-honors learning community programs varied between 1.50 and 1.62.

Using Astin's (1993) I-E-O model and assuming that the significant predicting input variables were accounted, this finding suggests that the environment, in this case the experiences associated with participating in a FIG, has a modest effect on predicting the outcome, degree attainment. As an example, a student in this sample who is predicted to have a 50% chance of graduating would be predicted to have a 54.2% chance of graduating if he or she participated in a FIG.

This finding is significant for several reasons. First, as previously mentioned, programs such as Freshman Interest Groups have been touted as a method to "engage students in academics and hopefully offer measurable success in the form of higher retention rates and higher graduation rates" (USNews.com, ¶ 1). Yet, there has been little evidence in the literature to support the claim that participation in a learning community has an impact on graduation. This finding suggests that at the research-intensive institution in this study, participating in a FIG increases the probability of degree attainment. Second, as highlighted in the literature review, many of the previous studies on relationship between learning communities and persistence did not control for entering characteristics of participants. This has led critics to speculate if these programs are simply serving students who are already likely to persist. This study accounted for pre-college characteristics that are common to most studies on persistence (i.e., high school achievement, standardized test scores, gender, ethnicity, academic major). Furthermore, this finding adds to the existing knowledge-base of both persistence and learning communities by including parental income, a variable that is often unaccounted for in studying persistence in higher education. As noted in Chapter 2, studies often erroneously link social class and race without fully understanding the relationships between the two

or other variables (Paulsen & St. John, 2002). The findings from the first research question suggest that at this particular institution, parental income, not ethnicity, explains degree attainment. Additionally, given the similarities in the odds ratios of FIG participation and parental income, one might assert that participation in a FIG increases the likelihood of degree attainment in a similar manner as a one level increase in parental income (i.e., an increase of \$16,000 in adjusted gross income). In other words, the predicted graduation rate for a student who participates in a FIG would be nearly identical to a non-FIG student with similar background variables whose parents' adjusted gross income was \$16,000 higher.

*Question 2: FIG Participation and Time to Completion*

The second research question was, "Controlling for demographic and pre-college attributes, what variables explain the time to completion between students who participate in a FIG and those who do not?" After controlling for the previously mentioned input variables, FIG students were more likely to earn a baccalaureate degree within four years compared to non-FIG students. The FIG's odds ratio of 1.16 was greater than the odds ratio for ACT Composite score, lower than gender and high school GPA, and nearly identical to the odds ratio for parental income. This finding suggests that after controlling for pre-college characteristics, participating in a FIG modestly increases the likelihood that one will graduate within four years. As an example, a student in this sample who is predicted to have a 50% chance of graduating in four years would be predicted to have a 53.7% chance of graduating if he or she participated in a FIG. Again, this effect size is comparable to the effect size associated with parental adjusted gross income.

This finding is significant for a couple of reasons. First and foremost, it suggests that participation in a FIG does explain some of the differences in four-year degree attainment between the FIG and non-FIG students. For at least some students, the experiences associated with the FIG, a first-year program, may assist in earning a baccalaureate degree within four years. However, given that the odds ratio associated with participating in a FIG for four-year degree attainment is smaller than the FIG's odds ratio in the previous research question, one could also infer that some, but not all of the differences in six year degree attainment between FIG and non-FIG students can be explained by FIG students graduating in four years. It is important to note from a statistical point of view, the odds ratio associated with FIG membership for four-year graduation could have been greater than the odds ratio of FIG participation associated with overall attainment. This was clearly the case for gender where, as previously discussed, being female was a stronger influence in predicting four-year graduation than it was for overall degree attainment.

### *Question 3: FIG Participation and Time to Completion*

The third research question was, "Controlling for demographic and pre-college attributes, what variables explain differences in degree attainment for lower income or lower ability students who participate in a FIG and those who do not?" As previously mentioned, lower income students were defined as students whose parents' adjusted gross income was less than \$48,000 a year. Lower ability students were defined as students whose high school grade point average was below a 2.75. After controlling for input variables, lower income and lower ability students who participated in a FIG were considerably more likely to earn a baccalaureate degree compared to students who did

not participate in a FIG. The FIG's odds ratio of 1.363 was greater than the odds ratio of ACT Composite, parental income, and gender. As an example of the effect size of the FIG, a student in this sample predicted to have a 50% chance of graduating would be predicted to have a 57.7% chance of graduating if he or she participated in a FIG.

This is perhaps the most significant finding in the study. The effect size for the FIG was far greater with this subset of students than it was for the entire sample used in examining the first research question. Simply put, participation in FIG is a stronger predictor for degree attainment for lower income or lower ability students than it is for the overall sample. This finding is consistent with the recently published report by Kuh, Kinzie, Cruce, Shoup, and Gonyea (2006) which found that educationally engaging experiences are stronger predictors of academic achievement and persistence for at-risk students than they are for the general student population. This finding also has profound policy implications which will be further discussed.

One should be cautious in comparing the FIG's effect size in this regression with the effect size in the first question. One might be tempted to conclude that the effect size in the first question was primarily from its impact on at-risk students, and that higher ability or higher income students may not benefit from FIG participation. However, logistic regression is not linear in nature and, therefore, one should not draw conclusions regarding the relationship between FIG participation and degree attainment for higher ability and higher income students based on this finding.

## Limitations

Although the results of the study imply that there is a positive relationship between participation in a FIG and degree attainment, there are several limitations that are important to highlight.

First, as noted in Chapter 1, this is a single-institution study and one should be cautious in generalizing the results to other institutions. Institutional factors such as mission, cost, size, and location have been shown to affect persistence (Woodard, Mallory, & De Luca, 2001). Furthermore, although student demographic attributes were considered, individual characteristics do not account for the unique student cultures present at every institution.

Second, although FIGs are open to all students and groups exist for nearly every academic major, students self-select into the program. One could argue that FIG students may have a stronger commitment to their major and the institution and, based upon Tinto's (1993) framework, would be more likely to persist compared to students who did not participate in a FIG. This study attempted to minimize the issue of self-selection by accounting for various student characteristics. However, these variables alone are not direct measurements of student commitment and intentions.

Third, as previously noted, logistic regression is explanatory in nature and does not demonstrate causality. One cannot conclude that the experience for the students who participated in a FIG was the reason the students graduated at higher rates. Similarly, one can also not make conclusions as to why FIG students graduated at high rates. These questions are best suited for other methodologies.

A fourth limitation is that assumptions were made during the coding of the categorical and ordinal variables that may have affected the overall results. For example, the researcher coded students who did not complete the FAFSA as “high income.” This allowed the researcher to treat parental income as an ordinal versus a categorical variable without losing nearly 40% of the students in the data set who did not complete the FAFSA. However, it is likely that some of the students coded in this manner came from lower and middle income families and simply chose not to complete the FAFSA for various reasons. Similarly, assumptions regarding academic major were made to reduce the number of categories of academic fields. For example, there are obviously curricular differences between students who major in engineering and those who major in biology that may, in fact, influence degree attainment. Although necessary to create a feasible statistical model, these assumptions likely affected the results.

A final limitation is that the logistic regression models used to predict degree attainment correctly classified only 65%-68% of the population, and the models more accurately predicted those who graduated versus those who did not. Factors such as affiliation in a Greek organization and parental education could have further explained degree attainment. Furthermore, one might conclude that there are a host of other issues that students face during their collegiate experience that affect degree attainment. Simply put, there may be other factors (e.g., first-generation in college, involvement in campus organizations, etc.) that explain degree attainment but were unaccounted for in this classification model.

## Implications for Future Research

This study sought to understand the relationship between FIG participation and degree attainment. Through this inquiry, several questions for future research emerged.

First, given the profound difference in the FIG's odds ratios in the first and third research questions, one might consider the relationship between FIG participation and degree attainment for students who are considered to not be at risk. Higher ability and higher income students may not be impacted by such programs or such students may be more likely to graduate within four years by participating in a FIG. More research is needed to understand how various subsets of students may or may not benefit from participating in a FIG.

Similarly, one may wish to examine the relationship between learning communities and persistence for particular academic majors. Although this study accounted for initial academic major, the impact that learning communities can have on degree attainment and time to completion will likely vary among the various degree programs. For example, academic programs that encourage collaborative learning among their students may see greater gains in persistence if their students' curricular and co-curricular experiences are integrated in a learning community. Likewise, academic programs with higher attrition rates, such as the sciences, may see greater gains in persistence by providing systematic social and academic support groups.

Third, given the strength of the odds ratio associated with gender in predicting four-year degree attainment, further inquiry should be conducted to better understand the gender gap that exists in four-year degree attainment. Much of the research on persistence and degree attainment ignores the issue of time to completion and simply looks at

retention or six-year graduation. Given that the cost of higher education has soared over the past decade, the issue of time to completion may become more closely linked to issues of access, and there may be factors that are assisting women in earning their degree more expediently than men.

Another implication for future research relates to the issues associated with socioeconomic status. As previously discussed by Paulsen and St. John (2002), “it is important to begin thinking about race with social class, rather than think of race and class as loose proxies for each other within broad, universalistic models” (p. 227). This certainly was the case in this study where parental income, not ethnicity, was found to be a statistically significant predictor of degree attainment. In light of the dramatic rise in tuition at many institutions over the past decade, further research is needed to more closely examine the relationships among socioeconomic status, ethnicity, and persistence. Furthermore, the finding that FIG participation is a stronger predictor of success for lower ability and lower income students coupled with the fact that the odds ratios of FIG participation and parental income were nearly identical in the first two research questions, raises questions as to why lower income and lower ability students appear to gain the most from participating in a FIG. One might speculate that issues of cultural and social capital, which are commonly tied to economic capital (Anyon, 1997; Lareau, 2000) are affecting persistence, and the FIG is serving as a mediator to provide at-risk students the social and cultural capital needed to succeed at the institution. Further research is needed to better understand the intricacies of these social and economic issues.

A fifth line of inquiry that is needed is more advanced analyses that examine the issue of causality. This research study was designed to explain differences in degree

attainment between FIG and non-FIG students. However, if learning communities continue to be viewed as a mechanism for increasing persistence, researchers should demonstrate causality between the program and positive educational outcomes. Otherwise, learning community proponents will continue to be criticized that other factors, such as self-selection, are affecting the perceived educational gains.

Finally, multi-institutional research is needed in order to better understand the effects of such programs across institutional types. Not only would such a study help expand the generalizable knowledge of learning communities, but it would also help researchers and practitioners understand the effectiveness of such programs across institutional types. For example, since one of the goals of many living-learning programs is to make the institution seem smaller to students and to integrate the curricular and co-curricular student experiences, it is likely that such programs are better suited at large, residential, and suburban campuses where the students' experiences are centered on the campus.

#### Implications for Institutional Policy

As discussed in Chapter 1, this study was intended to help guide institutional policy makers in assessing the effectiveness of living-learning programs. The overarching policy question was, "Do programs such as Freshman Interest Groups help students graduate?" Although the study does not show causality, there is considerable evidence to suggest that some of the differences between graduates and non-graduates can be attributed to participation in a FIG. Likewise, there is also considerable evidence to suggest that some of the differences in time to completion can be attributed to

participation in a FIG. Simply put, at the institution studied, FIGs appear to be a sound program for helping students persist and earn a baccalaureate degree.

An interesting finding which was not the focus of this study, but may have policy implications was the weakness of ACT score in predicting degree attainment. ACT was not a statistically significant predictor for lower income or lower ability students and, although statistically significant, it was not an overly strong predictor for either four-year or overall degree attainment for the entire population of students. This finding is somewhat surprising given the emphasis that is placed on standardized test scores for admission to the institution, admission to degree programs, scholarships, and even financial aid packages. This finding suggests that, at least at this institution, policy makers and administrators alike would be better served by carefully examining the factors that strongly affect persistence rather than standardized test scores, which are popular in the mainstream media, but appear to only minimally predict success. Likewise, researchers should not assume that standardized test scores alone can adequately control for entering academic ability.

The most profound finding from this study with clear policy implications is the relationship between FIG participation and degree attainment of at-risk students. The strength of the effect size raises the question, “Should all at-risk students be required to participate in a FIG?” Obviously there are at-risk students at this institution who do not participate in a FIG and graduate, and there are at-risk students who participate in a FIG and drop-out. However, the evidence presented in this study is compelling. After controlling for entering characteristics, at-risk students in a FIG were considerably more likely to graduate compared to students who did not participate in a FIG.

Perhaps a more profound policy question is, “What obligations do institutions have to help at-risk students succeed?” If institutions know that programs such as FIGs are effective in helping at-risk students persist, what responsibilities do institutions have in creating and promoting programs? This study suggests that at least at this institution, programs that are intentionally designed to integrate undergraduates curricular and co-curricular experiences can dramatically increase the probability that an at-risk student can succeed. As previously mentioned, in the recently published report, *Connecting the Dots: Multifaceted Analyses of the Relationships between Student Engagement Results from the NSSE, and the Institutional Practices and Conditions that Foster Student Success*, Kuh et al. similarly found that at-risk students have the most to gain from participating in academically engaging activities. In discussing their findings, they eloquently recommended the following:

There are limits as to what colleges and universities can realistically do to help students overcome years of educational disadvantages. Even so, most institutions can foster greater levels of student engagement and success by more consistently using what this and other research shows are promising policies and effective educational practices. While student engagement is not a silver bullet, finding ways to get students to take part in the right kinds of activities helps to level the playing field, especially for those from low-income backgrounds and others who have been historically underserved, increasing the odds that they will complete their degree program of study and enjoy the intellectual and monetary gains associated with the completion of the baccalaureate degree (p. 3).

Based upon the emerging literature on engagement and the well-documented research on involvement (Astin, 1993; Mackay, et al., 1991), one can conclude that institutions of higher education can “create conditions that motivate and inspire students to devote time and energy to educationally-purposeful, both in and outside the classroom” (Student Learning Imperative, 1996, p. 118), and that these conditions can enhance students’

chances for success. In short, although more research is needed across all institutional types, one might conclude that institutions that admit at-risk students have an obligation to structure the students' experiences in a manner that intrusively engages the student with other students, faculty, and staff in educationally purposeful activities.

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## VITA

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