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# Factors Present at Enrollment of College Freshmen That Predict Placement in Developmental Courses at Select Private Institutions

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FACTORS PRESENT AT ENROLLMENT OF COLLEGE FRESHMEN  
THAT PREDICT PLACEMENT IN DEVELOPMENTAL COURSES  
AT SELECT PRIVATE INSTITUTIONS

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for the degree of

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in

Educational Leadership

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## ABSTRACT

### **Factors Present at Enrollment of College Freshmen That Predict Placement in Developmental Courses at Select Private Institutions**

Attrition of college freshmen due, in part, to the lack of academic preparedness upon enrolling in college is an issue facing college and university administrators. Chief academic officers cannot ignore the fact that 30% of all students enrolling in postsecondary institutions require some form of “developmental” coursework. Institutional leaders need to be aware of predictors that determine the student’s need for enrollment in developmental courses and factors that influence student persistence. Administrators must focus on both the characteristics and experiences of students prior to college, as well as their experiences inside the classroom, and how these variables interrelate. To understand the variables that predict enrollment in developmental courses and the role developmental courses play in persistence, alumni (n=1725) from six select postsecondary institutions were surveyed. This was a survey research design involving a self report questionnaire, the College Student Persistence Questionnaire (CSPQ). There were 414 (24%) completed questionnaires returned. The grouping variable (dependent variable) was enrollment in one or more developmental courses. The predictor variables (independent variables) were gender, race, year of enrollment, high school grade point average (GPA), age at enrollment, withdrawal from an institution, year of graduation, transfer to an institution, attainment of a bachelor’s degree, transfer from an institution and age at graduation. Significant differences were found at the  $p < .01$  level with regard to high school GPA as a predictor of placement in developmental education courses. This study provides sufficient support for identifying the academic needs of first year students. Since student success is determined by student persistence, it is crucial that postsecondary institutions allocate funding for programs that support academic success for students. Developmental education is an institutional responsibility and it must be an institutional priority.

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## Chapter 1

### Introduction

The National Center for Education Statistics (1996) reported 99% of community colleges offer developmental courses, compared to 70% by four-year universities. There was a trend in the 1990s in certain areas of the United States that prohibited the teaching of developmental or remedial courses in four-year public colleges and universities. Florida public universities have not been allowed to teach developmental courses since 1985 (Garnett & Hood, 1998) and the University of Missouri system prohibited teaching developmental courses at their four-year institutions in 1970 (Arendale, 2002). Yet, research studies have shown that students continue to enter college unprepared for college-level coursework. These same studies have shown that students who take developmental courses in four-year institutions were more likely to persist to bachelor's degrees than students who start at a two-year institution and must transfer to complete their degrees (Boylan, 2002; Moore, Jensen & Hatch, 2002; Pascarella & Terenzini, 1991). The need is to identify students who are unprepared for college-level courses in order to optimize their postsecondary academic experience. Upcraft, Gardner & Barefoot (2005) stated "...if institutions are to challenge and support first-year students in their academic success, they must focus on both characteristics and experiences of their students prior to college, as well as their experiences inside and outside the classroom...and how these variables interrelate" (p 31).

### Background

There have been a plethora of studies about persistence to graduation in American colleges and universities over the past thirty years. Upcraft, Gardner & Barefoot (2005) stated that with declining enrollments and the changing demographics of the college

population, retention has become an issue that affects the success of postsecondary institutions. Ultimately, it is an economic issue. If first-year students are unprepared for college level coursework, there is a greater chance they will drop out after the first year. The largest attrition occurs during the first year and prior to the second year (American College Testing, 2002). When students drop out, institutions lose not only tuition money, but also state and federal government money. Bean (1996) stated the concern that retention was not only a financial issue, but also an ethical issue for postsecondary institutions. Bean (1986) stated it was unethical to enroll unprepared students for the economical benefit of the institution rather than for the education of the student.

The majority of retention studies have examined retention at two-year community colleges or four-year colleges and universities (Bean & Metzner 1985; Boylan, 2002; Grosset, 1993; MacLellan, 2001; Moore, Jensen & Hatch 2002; Pascarella & Terenzini, 1991; Tinto, 1976). There have been many studies conducted about developmental courses and the contribution they make to higher education by bridging the gap between high school and college-level courses (Boylan & Eaton, 2001; Casazza, 2004; Fernandez, Whitlock, Martin & VanEarden, 1998; Hebel, 2004; Higbee & Dwinell, 1996; Jacobson, 2004; Jehangir, 2001; Maxwell, 1979). However, there is a lack of studies identifying at-risk students and the contribution developmental courses make to the retention of first-year students at private, church-related colleges in Appalachia.

Pascarella and Terenzini (1991) related findings from twenty years of research studies about the retention rate of college freshmen. Those studies in attrition and retention showed that the dropout rate of freshmen from the freshman year to the sophomore year has not varied in those twenty years. The majority of the studies focused on the characteristics of dropouts. However, few studies concentrated on the profile of

at-risk students who persisted to graduation. According to the study conducted by Upcraft, Gardner and Associates (1989), of each year's full-time entering freshmen, one-third were not at the same institution one year later. Of those who dropped out during the freshman year, half dropped out during the first six weeks. Wilder (1993) found that of college freshmen who enrolled in institutions of higher education, 50% of all withdrawals occurred by the end of the first year of enrollment. According to Tinto's research (1987), out of the 2.6 million students who entered college in 1986, 1.6 million left college without graduating. Tinto (1993) stated that of 2.4 million students who enrolled in institutions of higher education for the first time, over 1.5 million did not remain at the original institution through degree completion. Day (2001), in his research of retention in colleges and universities in both Canada and the United States, confirmed the previous findings of Tinto, Upcraft, and Wilder. He stated that according to ACT 2000, attrition rates for colleges and universities have remained stable from 1983 to 1999.

Hardin (1989) concentrated her studies on the characteristics of unprepared college students. She identified six categories of unprepared students in 1989 and then revised them to five groups in 1998. The first group she classified as the poor choosers. She separated this group into those who failed to choose college preparatory courses while in high school and students who dropped out of high school. The second type of unprepared students was the nontraditional adult students age 25 and older, many of whom were women. The third group was students with learning disabilities. According to the United States Department of Education (1995), the number of students diagnosed with learning disabilities increased by 200 % between 1977 and 1994. The fourth

category of developmental students was the ignored students who may have had physical problems, behavior problems, emotional problems, or learning disabilities that were not identified in the public school system. They were students who were just “passed on” to the next grade; if they did not drop out, they graduated without academic preparation. The last group of developmental students was those who had limited exposure to the English language. Developmental reading and writing courses helped strengthen English skills for these students.

Other students who required developmental courses had a high school grade point average (GPA) of 3.0, a composite American College Testing (ACT) score of at least 21, or a combined Scholastic Aptitude test (SAT) score of 1,000. These were high-risk or at-risk because they were unprepared for college-level courses (McCabe 2000). These students may qualify for developmental courses as a result of taking a standardized placement test and need developmental courses to meet the requirements for regular college-level coursework. According to a report prepared by the National Study of Community College Remedial Education, it was possible for students with above average grades in high school to have entered college with deficiencies in math and English skills. The Associated Press (2003) reported freshmen placed in developmental courses stated they were in honors classes at their respective high schools. Their GPA and standardized test scores met the qualifications for academic-based scholarships, yet they did not meet the qualifications for college entry-level courses. According to two Chronicle of Higher Education surveys, Sanoff (2006) stated when college professors were asked about how prepared first-year students were, they reported that “students are ill prepared for the demands of higher education” (p. 1). Sanoff quoted one English professor from

Colorado who said, “I’d like to see advanced-placement courses eliminated....They foster a false sense of preparedness when they are not equivalent to college-level work” (p. 3).

According to Pascarelli and Terenzini (1991), a substantial amount of research has shown that students’ high school grades were the best predictor of student persistence. Students with high GPAs were more likely to persist than students with low high school GPAs. Students in four-year institutions that were resident-oriented were more likely to persist. Students at two-year colleges were more likely to have lower high school GPAs than students at four-year institutions. Older students were more likely to have lower high school GPAs than traditional students. High school class rank was another predictor of persistence, but not as strong a predictor as high school GPAs. The combination of high school GPA and class rank, if high, was a strong predictor of persistence in all groups and, if low, was a strong predictor of students who would fail to persist (Astin, 1976; Bean & Metzner, 1985; Pascarelli & Terenzini, 1991; Tinto, 1975). The one exception in Astin’s (1976) study was with African-American students where he found high school class rank a better predictor of persistence in a white college than high school grades. In summary, of all pre-college characteristics, high school GPAs were found to be the most potent predictor of persistence in two-year and four-year colleges and universities.

Some state legislators and some college administrators do not see the need for developmental education at the college level. Studies that have been conducted from the 1960s through the 1990s that relate to the attrition rates of college freshmen have concentrated on state colleges and universities, or on community colleges; however, few studies have been conducted in private, independent, church-affiliated colleges (Ferdandez, Whitlock, Martin & VanEarden, 1998). Early studies of student attrition by

Tinto (1975) and Bean and Mentzer (1985) emphasized the negative attributes that can be used to predict students' inability to be retained to graduation. These studies by Tinto (1975), and Bean and Mentzer (1985) examined the conditions of the institution or the characteristics of students who drop out of college without attaining a degree. The emphasis was on attrition, its causes, and the characteristics common to students who drop out. The current study will emphasize the need to identify unprepared first-year students in order to provide them with the tools they need to attain academic success. It will be a study of characteristics of students enrolled in one or more developmental courses during their freshman year and the persistence to graduation.

Boylan and Eaton (2001) commented about the need for more research in the field of developmental education; however, they further commented that:

Developmental educators may lack the expertise necessary to do many kinds of research studies. They may lack the time to organize, analyze, and report the results of their own program data. But these factors should not prohibit them from collaborating with others to improve the amount and quality of research in the field. There are several ways in which developmental educators may collaborate with others in promoting research (p. 14).

According to Lundell and Higbee (2001), developmental educators are more student-oriented and less research-oriented. Although developmental education is not new, research in developmental education is relatively new. States such as Arizona, California, Florida, Georgia, Tennessee, and Texas have conducted statewide studies on developmental education. However, Lundell and Higbee reported that the results of these studies have not been shared with developmental educators. They stated that developmental educators need to make concerted efforts to access this information. More

developmental educators need to become involved with research in developmental education and share their information by networking with other developmental educators through state, regional and national organizations. Research that is occurring in the field of developmental education is either being done at the state level and is not shared with the developmental educators, or it is being done by individual developmental educators, is not published and, therefore, not accessible to others.

In the 1980s and 1990s there was a plethora of research studies conducted on the retention of college freshmen. Many of the retention studies conducted during that decade concentrated on large four-year colleges and universities and the community college sector of higher education (Feldman, 1993; Fernandez, Whitlock, Martin & VanEarden, 1998; Glass & Garrett, 1995; Grosset, 1993; Heath-Thorton, 2002; MacLellan, 2001; Pascarella & Terenzini, 1991; Tinto, 1987; Zwerling, 1996,). The Moore, Jensen and Hatch (2002) study confirmed what Anderson (1972) reported that although two-year colleges may encourage young people to seek a college education, they may prevent some students from persisting to a bachelor's degree. Pascarella and Terenzini (1991) cited research from 20 years of retention studies. The problem was that none of these studies concentrated on four-year, small, private, church-affiliated colleges despite the consideration of larger four-year colleges and universities, both public and private.

There is little information on identifying freshmen students enrolled in one or more developmental courses in four-year, small, private, church-affiliated colleges in the Appalachian region of the United States. This study added to the body of literature in the area of identifying at-risk first-year students in church-affiliated colleges in the Appalachian region.

### Statement of Problem

The problem is attrition of college freshmen due, in part, to the lack of academic preparedness upon enrolling in college. There is a lack of research in developmental education in small, four-year, private, church-affiliated institutions. It is paramount that institutional leaders be made aware of the pre-college predictors that determine the student's need for enrollment in developmental courses and if enrollment in a developmental course had an influence on student persistence.

### Statement of the Purpose

The purpose of this study was to analyze a series of variables as predictors of enrollment in developmental courses in select institutions. This study was to determine if there are variables present at the time of enrollment of college freshmen in select institutions that would predict placement in one or more developmental courses their freshmen year. The grouping variable (or dependent variable) was enrollment in one or more developmental courses. The predictor variables (or independent variables) were gender, race, year of enrollment, age at enrollment, high school GPA, withdrawal from an institution, year of graduation, transfer to an institution, attainment of a bachelor's degree, transfer from an institution, and age at graduation. This study analyzed if there were factors present at enrollment that would distinguish first-year students who would be enrolled in developmental courses from first-year students not enrolled in developmental courses and what affect, if any, these traits would have on persistence to graduation at six select institutions.

### Theoretical Framework

The theoretical framework for this study was based on Victor Vroom's Expectancy Theory (1964). Vroom's expectancy theory deals with motivation and

management. It assumed that people were motivated by many factors including personality, knowledge, talents, interests, experiences, and abilities. According to Vroom's theory, individuals can be motivated if there is a positive relationship between their effort and performance and if their performance results in rewards. Since the reward satisfies a need, the desire to have the need satisfied was strong enough to motivate the person to exert the needed effort (Thomas & Vroom, 1971; Vroom & Deci, 1981; Vroom & Jago, 1988; Vroom & Yetton, 1981).

The Vroom theory of motivation, when applied to the current study, involved both the problem of students' attrition due to academic unpreparedness upon enrolling in their institution and the decision to offer developmental educational courses as motivation to help students persist to graduation.

#### Research Questions

In this study the grouping variable was enrollment in developmental courses. Enrollment in the developmental courses of reading, math and writing were examined. The following research questions were used in the study.

1. Is there a significant predictive relationship between persistence to graduation and group membership in a developmental course in college?
2. Is there a significant predictive relationship between the gender of freshmen and group membership in a developmental course in college?
3. Is there a significant predictive relationship between the race of freshmen and group membership in a developmental course in college?
4. Is there a significant predictive relationship between the year of enrollment of freshmen and group membership in a developmental course in college?
5. Is there a significant predictive relationship between the age of freshmen and group

membership in a developmental course in college?

6. Is there a significant predictive relationship between the high school GPA of freshmen and group membership in a developmental course in college?

7. Is there a significant predictive relationship between freshmen who withdrew from the institution and group membership in a developmental course in college?

8. Is there a significant predictive relationship between the year of graduation and group membership in a developmental course in college?

9. Is there a significant predictive relationship between students who transferred to the institution and group membership in a developmental course in college?

10. Is there a significant predictive relationship between students who obtained a bachelor's degree and group membership in a developmental course in college?

11. Is there a significant predictive relationship between students who transferred from an institution and group membership in a developmental course in college?

12. Is there a significant predictive relationship between the age at graduation and group membership in a developmental course in college?

### Operational Definitions

**1. Academic Preparedness:** (prepared or unprepared) Entering students who have low ACT verbal scores on the ACT or SAT are required to take placement tests. If the student meets the criteria for these tests in reading, English or math, the student is placed in college-level courses (MacLellan, 2001).

**2. Attrition:** Failure to persist or re-enroll in a postsecondary institution (Astin, 1976).

**3. At-risk Student:** Students whose high school grades were below average (Maxwell, 1979). Students who may have the high school GPA, or composite ACT scores or SAT scores to qualify for admission to a postsecondary institution, but do not possess the

abilities or skills or who are underprepared academically to handle college level courses (Roueche & Kirk, 1973).

**4. College-Level Courses:** Courses that require students to be assessed as academically skilled and prepared upon admission or college courses given for credit and apply toward a degree (MacLellan, 2001).

**5. Developmental Education:** Programs and services designed to meet the needs of underprepared college students. The National Center for Educational Statistics (1991) gave the following definition: any program, course, service or activity in reading, writing, or math for students lacking the skills necessary to perform college level work as defined by the institution.

**6. First Generation College Student:** Students whose parents did not go to college (NCES, 2001).

**7. Graduation Rate:** The number of full-time freshmen students who graduate within 150% or six years of entering the institution (Student-Right-To- Know Act, 1990).

**8. Nontraditional College Student:** Students who are older than the traditional college age of 18-22 year olds, women, minority students, international students, students with learning disorders, students with disabilities, and returning students who may have interrupted their education for a number of reasons such as job responsibilities, family obligations, or health reasons (Maxwell, 1979). According to Bean and Metzner (1985), nontraditional students are older than 24, may be part-time or full-time, and may commute or live on campus.

**9. Persistence:** To remain at a postsecondary institution until degree completion, until graduation, or until one's academic goals are met (Tinto, 1987).

**10. Remedial Courses:** (often referred to as developmental courses) Courses offered for credit or noncredit that are specially designed to help underprepared students reach a level of academic accomplishment which would enable them to enroll in college-level courses (Maxwell, 1979). Also defined as precollegiate courses (U.S. Department of Education 2004).

**11. Retention:** Retaining students at an institution of higher education until they reach their educational goals, degree completion, and/or graduation (Tinto, 1987).

**12. Underprepared students:** Students whose academic skills are below other students enrolled as freshmen in the same institution and /or who may not have the knowledge base to be academically successful in a freshman college-level course (Maxwell, 1979).

In research studies from the 1970s to the present, authors such as Astin, Maxwell, Pascarella, Terenzini, Tinto, and others used the terms *retention* and *persistence* interchangeably. However, *persistence* pertains more to the responsibility of the student to remain at an institution while *retention* is associated more with the institutional responsibility. In the same manner authors describing *remedial* courses and *developmental* courses often used the terms interchangeably; however, *remedial* refers to courses offered to the students who need remediation while *developmental* refers to any courses, programs or services available to bring the student up to college-level work (Maxwell, 1979; Roueche & Kirk, 1973). The terms *dropout* and *attrition* are also used interchangeably. The term *dropout* refers to the student's responsibility to persist and *attrition* implies the institutional responsibility to retain the student (Tinto, 1993; Wilder, 1993).

## Significance of the Study

This study is significant for small, independent, private, church-affiliated colleges in the Appalachian area of the United States. Much research has been done on attrition and persistence in large postsecondary institutions from the 1960s to the present. In the 1990s, research began to include community colleges. In 2000, researchers were studying developmental education and the role it played in retention in large institutions and community colleges. Few research studies have focused on the needs of at-risk students in small private colleges. This study examined the factors that would predict placement in developmental courses for underprepared college freshmen at small, private institutions. Administrators and faculty of small private colleges may use the information gained from this research study to identify underprepared students, to plan new programs, to reorganize existing programs, to develop curriculum, and to coordinate existing departments. They could also use this information for staffing and budgeting purposes and to develop cooperation among the administration and the faculty in order to help underprepared students succeed academically and to persist until graduation. From state and local governments to the colleges in Appalachian College Association (ACA), the information gained from this study can be helpful to college administrators in accomplishing the seven tasks of planning, organizing, staffing, directing, coordinating, reporting, and budgeting (POSDCoRB) (Fayol, 1923; Gulick & Urwick, 1969; Schmidt, 2004; Selingo, 2000; Shafritz, & Ott, 1992).

Presidents of private, independent colleges could use the results of this study in the development of strategic planning for implementing developmental education, which, in turn, will meet the needs of unprepared students and help them reach their academic potential (Griffiee, 2004; Schmidt, 2004). The chief administrative officers of small

private colleges could use the information from this study to determine budgetary support for student enrichment and student development programs. The chief academic officers could use the information generated by this research study to facilitate appropriate faculty development for the purpose of providing services for at-risk students (Casazza & Bauer, 2004). An academic dean could use the results of this study to coordinate developmental education initiatives (Boylan, 2002). Academic department chairs could use the results of this study to assist faculty members in the creation of effective professional development plans that address the needs of at-risk students and to encourage cooperation among the faculty involved in teaching developmental courses (Boylan, 2002; Carpenter, Brown & Hickman, 2004).

The results of this study support the concepts of Vroom's Expectancy Theory of motivation when unprepared students reach their academic goals. When four-year institutions offered developmental education courses, students who were unprepared received the help they needed in order to achieve their academic potential and to persist to graduation. When their needs were met academically, students were motivated to achieve the reward of a college degree.

#### Limitations

The study was limited by the responses from the survey questionnaire and the results may not apply to larger postsecondary, private, church-affiliated or public institutions. The data analysis results could only be generalized to small (under 1,000 full-time equivalent students), private, church-affiliated institutions. It was assumed that the students who enrolled in the fall of 1996, 1997, and 1998 would have graduated in the spring of 2001, 2002, 2003 or 2004. This study was limited by the accuracy of the participants' responses on the self-reported paper pencil survey questionnaire (Fowler,

2002). Data in this study was gathered from a single survey questionnaire instrument and the results were limited by the data generated by the questions asked (Babbie, 1973; Fowler, 2002). Students may not have been aware that the subjects they were taking as freshmen were developmental courses; therefore, their responses to the questionnaire may have been inaccurate. According to a U.S. Department of Education report Principal G56 Indicators of Student Academic Histories In Postsecondary Education (2004), a study of remedial courses in postsecondary education from 1972-2000, transcript data is more accurate. The report said 80% of students who responded to surveys indicated they had never taken developmental courses; however, transcript data proved otherwise.

### Summary

Chapter one focused on the problems of high attrition rates for first-year college students, of identifying unprepared first-year students, and of the need for developmental courses in four-year postsecondary institutions. In this chapter the need for more research in developmental education and the lack of research in small, private institutions was explored. In chapter one the retention models of Tinto (1975), and Bean and Metzner (1985) were examined. This chapter included statistical data of student attrition, the characteristics of at-risk students, and characteristics of students who drop out of higher education before degree completion.

The introduction was followed by the background, which included a brief review of the literature. Chapter one included this problem statement: attrition of college freshmen is due, in part, to the lack of academic preparedness upon enrolling in college and the lack of research in small four-year institutions. The theoretical framework for the research study was based on the Vroom Expectancy Theory. After the theoretical framework section were the statement of purpose, the research questions, the twelve

operational definitions of terms, the significance of the study, and the limitations of the research study.

## Chapter 2

### Literature Review

The literature related to this research study is organized into three main topics: characteristics of early models of retention, characteristics of postsecondary institutions, and the characteristics of the students who persist. In the first section, different postsecondary institutions, their characteristics, and retention studies particular to those institutions are discussed. Despite the fact there is a plethora of literature on research studies about attrition, retention, and persistence, there is very little research involving private, church-affiliated, liberal arts colleges. There is less literature related to colleges in the Appalachian region of the United States. The second section deals with past retention studies and theories in order to lay a framework for the current study. The third section examines the characteristics of freshmen and the relationship those characteristics have on the academic success of the students who persist to graduation.

Earlier studies involved examining the conditions of the institution or the characteristics of students who drop out of college without attaining a degree. The emphasis was on attrition, its causes, and the characteristics common to students who drop out. These studies emphasized the negative attributes that can be used to predict student's inability to persist. In the current study, the attributes that lead to enrollment in developmental courses, academic success, and persistence to graduation are examined.

#### Characteristics of Four-year Colleges and Universities

Herbst (1997) described many of the original colonial colleges and universities as having a rich religious heritage. In New England the Baptists, Anglicans, and Quakers were the predominant religious sects, while in Virginia the Presbyterians and Quakers were the predominant religions. As a result, the postsecondary institutions of the

seventeenth and eighteenth centuries were affiliated with the predominant religious denominations in their demographic regions. Harvard was associated with the Congregational church, Yale was affiliated with the Presbyterian Church, and the College of William and Mary was Anglican. Since the origin of these institutions centered on their religious heritage, these colleges and universities concentrated on an education that emphasized religious doctrine and preparation for religious service. In 1756, the trustees of Yale College appointed Naphtali Daggett as the professor of divinity. A year later he preached at the Church of Christ in Yale College where he became the pastor.

Herbst (1997) stated that, although many of the first colleges and universities had a rich religious heritage, having a religious affiliation brought turmoil to these institutions over governance. The main issues of governance stemmed from the tension over who would exert the most control over the institutions, the ecclesiastical authorities or the secular authorities. Though many of the early institutions lost their religious emphasis and some religious institutions had to close their doors for lack of financial support, throughout the history of higher education, religiously-affiliated colleges and universities have continued to be established.

Finkelstein (1997) stated the purpose of the early institutions of higher learning was to educate the youth of the colonies. The young men would be instructed in a basic curriculum that would prepare them for three occupations: ministers, lawyers, and doctors. Many times these educated men of the community would become contributing members of society by taking their place as pastors of local congregations, lawyers, and physicians. As the needs of the community grew, the curriculum of the colleges and universities expanded to provide an education for a variety of professional occupations from teachers and agriculturalists to businessmen.

There are few records of enrollment and retention for these early institutions of higher learning. It was not until the mid-1800s that enrollment numbers were instrumental. Leslie (1997) showed the enrollment numbers for Princeton, Franklin and Marshall, Bucknell, and Swarthmore from 1869-1910. Princeton grew from 328 in 1869 to 1,266 in 1910. Franklin and Marshall grew from 72 to 223. Bucknell went from 64 to 411 and Swarthmore increased from 26 to 359.

In colonial times there may have been only 9 to 24 students enrolled in a college. Because of the small size of the early institutions of higher education, many of the factors Tinto (1975) found to be significant in the retention of students in the 1970s were present in the early institutions of higher education. Because the early institutions were not structured like the colleges and universities of today, there were several factors that would have contributed to retention. First, according to Tinto (1975), students would persist in institutions where they were expected to succeed. Early institutions of higher learning expected their students to complete their studies and become successful members of the community. Second, students persist at institutions where the graduation requirements are made clear. In the early institutions there was a set pattern of study that the students knew and to which they adhered. Gruber (1997) stated that the American liberal arts college was a sectarian institution. He said, "Its curriculum was prescribed and reflected the view that knowledge was a fixed body of truth..." (p. 203). Third, students, according to Tinto, would persist at institutions that offered academic, social, and personal support where the student felt a part of the academic environment. Vine (1997) explained the social role of the eighteenth century higher education as a place for the young elite not only to receive an education but also to benefit from a strong social component. Vine stated, "By the middle of the eighteenth century, teachers and parents

began to view the college as an institution which would ...provide opportunities for a broader range of personal and professional contacts, they established an institution that functioned to solidify an elite while training students to serve the public arena” (p. 119). The fourth factor in Tinto’s model stated that students persist if they felt they were a valued part of the institution.

In the early eighteenth century, classes in institutions of higher learning consisted of the tutor, as the instructor was known, and his students. The tutor instructed his students through the completion of the education process. There were no faculty, presidents, or administrators. Thus, there were just two components of higher education: the tutors and the students. Finkelstein (1997) explained during the eighteenth century “... [I]nstructional staffs were composed entirely of tutors, young men (often no more than twenty) who had just received their baccalaureate degree and who were preparing for careers in the ministry” (p. 81). Tutors were assigned a class of pupils for four years or until the completion of the course of study for the baccalaureate program. The tutors were with their students all day and slept in the same accommodations as the students at night. They were responsible for their students’ academic instruction, moral training, and spiritual development.

The last component of Tinto’s (1975) model stated that students would persist at institutions that promote a learning environment. While classes were small, the core emphasis was on education. During the colonial times the learning environment was through observation of ministers, lawyers, or doctors. Later, under the tutor system, the student tutor ratio enabled the emphasis to be on imparting knowledge. As a result the “fit” of the student and the institution that Tinto found to be a significant factor in persistence was more relevant then than now and less of an issue. In colonial times and

into the nineteenth century there were less institutional factors such as financial aid, athletics, and extracurricular activities and not as many career choices or majors available. There were fewer choices and decisions to be made and fewer institutions from which to choose.

Unlike the early colonial trends of higher education and the educational system of the eighteenth century, the modern higher education system continues to try and meet the academic needs of the students, but in an entirely different atmosphere. After World War II the academic community went through major changes. More colleges and universities were established to serve a vastly diversified student community with specific academic needs. As academic needs and enrollments grew, researchers became interested in the characteristics of the institutions and the students in relationship to retention and attrition.

In addition to the Tinto (1975), and Bean and Mentzer (1985) studies, there were many other retention studies, especially during the 1960s through the 1990s. Astin (1976) began his study of college dropouts in 1968. He studied a sample of 9,750 subjects from a population of 41,356 who enrolled in 1968. He eliminated those who did not obtain a bachelor's degree, which reduced the number to 38,703. He used a student questionnaire to obtain data. The group was divided into two groups: dropouts and non-dropouts. Of the 110 variables, 53 contributed significantly to the prediction of dropout rates. Some of his findings included situations in which students were less likely to drop out, students who resided on campus, those who performed well in secondary school, students who were religious, and those who retained the religion of their parents. He examined factors such as gender, age, grade point average(GPA), race, and institutional characteristics. His conclusions were that institutions need to be examined more specifically as to their characteristics and the population they serve. He stated that there

were major differences between two-year colleges and four-year colleges as well as major differences between small schools and larger schools. He recommended that more studies be conducted to analyze data that would be helpful to college administrators and policy makers. His studies did not concentrate on students who were unprepared for college and the measures the institution could take to insure academic success for developmental students.

The Moore, Jensen, and Hatch (2002) study examined the retention rates for developmental students at two-year and four-year postsecondary institutions. Their study concentrated on the General College of the University of Minnesota and the relationship of developmental students who enrolled in the General College and then re-enrolled at the University of Minnesota. They also studied two-year community colleges and technical colleges, four-year private, public and research colleges. They gathered data from the National Center for Developmental Education to use in their research. The conclusions of their study were that developmental students who enroll at two-year colleges are retained at a 33.1% rate while developmental students enrolled in four-year institutions were retained at 41.8%. At community colleges, 26% of developmental students were retained while at four-year private institutions 42% were retained compared to 29% at public institutions. The attrition rate for developmental students who transferred from a two-year institution to a four-year institution was high. Therefore, the retention rate was higher for developmental students who enrolled in four-year institutions and remained until graduation. Much of their study was based on research from the National Center for Developmental Education, the General College of the University of Minnesota, and the University of Minnesota.

Pascarella and Terenzini (1991) compiled retention research studies from the 1970s-1990s. They reviewed studies about institutional size and retention at religious institutions along with the student precollegiate characteristics of high school GPA, high school class rank, and ACT and SAT scores. They examined characteristics such as gender, age, and nontraditional students. Their findings confirmed that high school GPA and class rank were two of the best predictors for college persistence. Astin (1976) noted institutional size was a positive factor in retention from a student population of 500 to 20,000. Below 500 the retention rate was lower and above 20,000 the retention rate was lower. However, between 500 and 20,000 the size of the institutional enrollment did not affect the retention rate.

Religious institutions have a higher retention rate than public institutions. Astin (1976) recorded findings that the religious background of entering freshmen and their parents' religion were related to student persistence. With other factors held constant, the dropout rate for Jewish students whose parents were also Jewish was the lowest at 19%. The dropout rate for Catholic students who had Catholic parents was 26%, while the dropout rate for Protestant students who had Protestant parents was about 30%. The highest dropout rate was with students who expressed no religious preference. These data were obtained by multiple regression equation, controlling for other student characteristics including ability measures. Therefore, students who enrolled in college and expressed no religious preference were more likely to not persist than students of similar abilities and background who expressed a religious preference.

The students who were in the two most dropout-prone groups were students whose parents were Protestant, but expressed no personal religious preference, and students whose parents were not religious and expressed no personal religious

preference. Religious preference and student persistence were reported in earlier studies (Astin, 1971; Astin & Panos, 1969; Newman, 1965). Religious preference and persistence in religious-affiliated colleges and universities were confirmed in the Heath-Thornton (2002) study and the Thorn (1998) study. Astin summarized that among the predictive factors that were most important to students' persistence were the students' religious background and their religious preference.

In the Astin study, Jewish students and Catholic students had higher retention rates at religious institutions. The retention rate was higher still if their religious faith continued to be the same as their parents. These studies did not examine the retention of developmental students, however.

The history of American higher education began in colonial times. The first instruction was given through the apprenticeship system. Young men would observe and be mentored by practicing ministers, doctors, or lawyers. Finkelstein (1997) described how this system later gave way to the tutor system in which a young man of about twenty years old who had just finished his education would shepherd from nine to twelve students through the educational process. The tutor would spend twenty-four hours with his charges instructing them, eating with them, and sleeping in the same facility with them. Finkelstein (1997) stated the education process could take two to four years. According to Finkelstein, that system gave way to the professorship instructional method in which instructors taught only specific subject matter and the higher education system as we know it today came into being.

Early on, retention was not an issue. It was not until the 1800s and 1900s that institutions began keeping extensive enrollment records. According to Gruber (1997), by the 1960s and 1970s significant changes occurred in the higher education system. There

were more colleges and universities in the United States than in other countries. More women were entering higher education, and older students were enrolling in unexpected numbers in colleges and universities. At this time colleges and universities developed an interest in the factors that resulted in students who dropped out of college before obtaining a degree. Tinto (1975), and Bean and Mentzer (1985) developed models of integration and attrition. Astin (1976) studied thousands of freshmen who were divided into two groups: those who dropped out and those who persisted to degree completion. Moore, Jensen, and Hatch (2002) studied developmental students who enrolled in two-year and four-year institutions.

#### Two-year Colleges, Junior Colleges and Community Colleges

Although many of America's four-year colleges and universities had a rich religious heritage, the community /junior colleges, as they were sometimes known, did not enjoy such prestigious beginnings. In an essay on the history of community colleges, Pedersen (1989) examined the origin of the early junior colleges or community colleges. Two hundred and seventy five junior colleges were started between 1900 and 1940 in small towns in the Mid-West and in western states by community leaders who wanted to provide educational opportunities for students in the community who would not otherwise have the opportunity to attend a college or university.

According to Pedersen (1989), in some instances establishing a community or junior college was a way for business leaders and community leaders to add prestige to small towns and communities. He indicated that community colleges were, therefore, not born out of a specific need, nor were they established for a specific purpose. Many community colleges still struggle with this lack of academic purpose or identity. Pedersen (1989) stated in addition to being established to provide academic opportunities,

and for community prestige, some community colleges were established as a branch of a larger university. With all of this in consideration, one might ask what role community colleges play in the academic community? Pedersen might have asked whether community colleges were an extension of high school or a pre-university? Because community colleges and junior colleges have had such diverse backgrounds, many community colleges have established their own purpose for existing.

As Pedersen (1989) pointed out, some may be a continuation of high school for those students who want more education, and for some students community colleges could be a way to get into a university. Regardless of the purpose of community colleges, the studies of retention for community colleges did not manifest until the 1990s, nearly thirty years after the surge of retention studies in four-year institutions. If community colleges are an end or an extension of high school, then the retention rate is high, however, if the student intended to obtain a bachelor's degree, the selectivity of a community college was a negative factor in retention according to Astin (1976).

MacLellan (2001) examined the relationship between unpreparedness and persistence in community colleges. She conducted a quantitative and qualitative research study of ninety-four freshmen students who intended to enroll as part-time or full-time students at a Mid-West community college. The study consisted of a questionnaire and interviews. From the initial ninety-four students, thirteen were chosen to participate in the interview process as a part of a case study. The purpose of the study was to examine the relationship of academic preparedness and student persistence at a community college. The results were only one-third of the sample persisted through two semesters. Those who did not persist dropped out after the first semester. Of those who enrolled the

second semester, two-thirds were retained through that year. MacLellan's figures in 2001 were reflective of retention studies in the 1970s and 1990s that were conducted at four-year institutions. MacLellan's study examined the persistence of students who were prepared for college and those who were unprepared. Although her figures were similar to the earlier studies of Astin (1976), Bean and Metzner (1985), Greenberg (1997), and Tinto (1975), her study was limited to one community college and her sample size was small (48 after attrition).

Roueche and Kirk (1973) studied five community colleges of forty community / junior colleges that were submitted for the study by junior college presidents, deans, and professors. The five chosen were in Texas and were South Campus, El Centro, San Antonio, Southeastern and Burlington. Their study centered on the community colleges because they believed the community colleges were innovative in developing instructional methods that would accommodate entering students' needs rather than requiring students to measure up to previously set standards. The two goals of their study were to evaluate the effects of remedial educational programs on students' academic performance and persistence and to assess the factors that are related to the failure or success of remedial programs as related to student retention and academic success. The colleges chosen had to have a remedial program in operation for three years to be considered. Three of the colleges were urban and two were rural. The population was students who were low academic achievers in the fall semesters of 1969-1971. Roueche and Kirk (1973) compared the students who were in remedial programs with students who were not in remedial courses. The results of this study demonstrated that remedial students persisted better than students who were not in remedial programs. One example

cited was students' persistence at South Campus. Ninety-four percent of those students in remedial programs persisted to the second semester compared to 76 % of students on the same campus who were not in remedial programs. This study involved five community junior colleges in Texas in from 1969-1971. It showed the value of remedial programs in the persistence of students in community colleges in Texas.

#### Private, Liberal Arts, Church-Affiliated Colleges

There is less literature on private, liberal arts, church-affiliated colleges and the role developmental programs play in student persistence. According to Pascarelli and Terenzini (1991), when statistically controlling for all other variables, private colleges had a modest statistically positive effect on student persistence and academic success. This was confirmed by other reports issued by Pascarelli and Terenzini, based on independent national samples. One of the conclusions assumed by the finding that private colleges had a positive effect on student persistence and academic success was that students' commitment to private colleges may be a key factor to their persistence. An additional conclusion by the Pascarelli and Terenzini research was that student retention was enhanced because most private colleges were residential with students living on campus.

In the Moore, Jensen, and Hatch (2002) study, students in developmental courses had a better retention rate in private four-year institutions and in research universities. This study examined the retention rates of developmental students in two-year community colleges, technical colleges, four-year private, public and research colleges and universities. They found the retention rate of developmental students to be higher in private four-year institutions (42%) and research universities (48.6%), compared to public institutions (29%) and community colleges (26%).

The Heath-Thornton (2002) study was conducted at Roberts Wesleyan College in Rochester, New York, a private, liberal arts, independent, church-affiliated institution. The purpose of her study was to determine the factors that affected the persistence and speed of degree completion of adult learners. Heath-Thornton sent the Adult Student Persistent Questionnaire to seventy-three alumni of Roberts Wesleyan College. She had a return rate of forty-four or 60%. Heath-Thornton found that spirituality was a leading factor in persistence for the adult student at Roberts Wesleyan College. Sixty-three percent cited Christian mission influence as a factor that contributed to their choosing to enroll at Roberts Wesleyan College. Also, 66% indicated that enhancement of their spiritual development was important in their decision to return to college. Sixty-seven percent of those who responded indicated that they considered withdrawing because of financial constraints. Ninety-two percent responded that the enthusiasm of the instructors for teaching, the instructor's knowledge of the adult learner, and respect for the students were very important to their persistence. Heath-Thornton (2002) acknowledged limitations of the study due to a small sample size and the fact that the questionnaire asked for retrospective information. This study was conducted at a private, independent, liberal arts, church-affiliated college. It was designed to examine factors that lead to persistence and speed of completion for adult learners. It was not designed to examine developmental students and their persistence.

The Muller (1996) study examined the records of students enrolled in the fall of 1994 at Ohio Valley College in Parkersburg, West Virginia, to determine what factors lead to failure to persist in a church-affiliated private institution that had minimum admission requirements. In her study, Muller examined data obtained from students' enrollment records from the registrar's office of Ohio Valley College. The data was

analyzed according to the two dependent variables: students who persisted for two or more semesters and students who failed to persist beyond the first semester. Several independent variables were also analyzed, including ACT scores, high school GPA, and high school class rank. Two other variables were statistically noted: church affiliation (Church of Christ or not) and the length of time between application to college and enrollment. The findings of this study were inconclusive. Limitations of the study included missing data due to incomplete files. Recommendations from the researcher were that other studies be conducted using similar institutions in order to compare the results.

The Longmore-Gable (1997) study was a follow-up study to the Muller study. Longmore-Gable studied student attrition in a private, Christian college, Ohio Valley College in Parkersburg, West Virginia. Student information gathered in the admissions process from fall 1994 to fall 1996 was used. The dependent variable was failure to persist. The independent variables were gender, ACT scores, high school GPA, high school class rank, and church affiliation. Two limitations of this study were missing data in student records and non-cognitive variables that affect attrition. The finding of this study was that high school GPA was the best predictor of student persistence through two semesters. The recommendation of this study was to conduct a similar study with other colleges that were comparable to Ohio Valley College.

A follow-up to the Muller and Longmore-Gable studies was conducted by Thorn in 1998. In the Thorn study three institutions were involved: Ohio Valley College in Parkersburg, West Virginia; Rochester College in Rochester, Michigan; and David Lipscomb University in Nashville, Tennessee. The Thorn study examined the persistence of students in Church of Christ colleges and universities. The dependent variable was

persistence for two or more semesters. The independent variables were Church of Christ membership, gender, ACT scores, and high school GPA. Information was gathered from the students' records obtained from the admissions process from the registrar's offices in each of the participating institutions. A total sample of 532 records were examined. The students were divided into three groups: Group A were students who did not persist beyond one semester; Group B were students who persisted beyond the second semester; and Group C were students who persisted to two years. Using the Pearson Correlation for the total sample, the researcher found that there was a significant correlation with ACT scores, high school GPA, Church of Christ membership, and persistence. However, the study revealed that Church of Christ membership was only significant at Ohio Valley College. It was recommended that further studies of this nature be conducted with institutions of similar demographics. Further research would enable additional comparisons that would be helpful in the recruiting process and in developing retention programs.

### Models of Student Retention

Tinto (1975) developed his Student Integration Model, which could be used to predict which students would decide to depart the institution. Bean and Metzner (1985) developed their Model of Student Departure, also called the Student Attrition Model, which could be used to predict students who would most likely not persist to graduation. Although both of these studies examined the attributes of students most likely to drop out before degree completion, these studies were paramount in the field of retention research.

Tinto (1975) revised his initial Student Integration Model twice, once in 1987 and again in 1993. In his initial model, Tinto attributed persistence to the fit of the characteristics, values, and goals of the student to those of the institution. The more

congruent the characteristics, values, and goals of the student were to those of the institution, the better the rate of retention. Another element Tinto found was that of persistence. When Tinto revised his 1975 retention model in 1987, he emphasized that the more interaction the student had with other students and faculty the less likely the student was to drop out of higher education institutions. The 1993 model emphasized the role of the community where the college or university was located and the relationship of that community to the institution as factors in student retention.

The findings of both Tinto (1975), and Bean and Metzner (1985) regarding retention of college students concluded that students who do not become a part of the college community are more likely to drop out before completing their college education. The current study is based on Tinto's (1975) model of retention, which he revised in 1987 and 1993. In Tinto's (1993) model of retention, he suggests five areas that contribute to student retention:

1. Students will persist to graduation in institutions that expect them to succeed.
2. Students will persist to graduation in institutions that make clear the institutional requirements needed for course completion and programs of study.
3. Students will persist to graduation in institutions that offer academic, social and personal support and where they feels included.
4. Students will be more likely to persist to graduation in institutions that value them as part of the institution.
5. Students will be more likely to persist to graduation in institutions that promote a learning environment.

According to Tinto (n.d.), the degree to which the characteristics of the institution match the characteristics of the student was important. The students must feel they have

been a valued part of the institution and they must have a sense of belonging. Tinto stated that the retention of students does not lie in creative programs but in the education and learning process.

Tinto (1993) viewed persistence as a longitudinal process between the student and the institution. He identified background information, which included pre-college schooling, skills, attitudes and family background, that was critical to the students' goals and commitment to education and commitment to the institution. He said the institution could not change the pre-enrollment characteristics of the student; however, it could create an environment that would lead to integration and enhance persistence. Therefore, Tinto placed more responsibility for retention on the institution rather than on the student. He felt at anytime the institution could fail in accommodating the students' social and academic needs and, therefore, create an environment which would lead to attrition.

Tinto (2001) more recently broadened his study to include not only traditional, residential students at four-year institutions, but also nontraditional (older, non-residential) students. He examined the best teaching methods and promoted the educational learning community style of instruction as the most appropriate teaching method for nontraditional students and at-risk students who are not prepared for college-level coursework. When studying nontraditional students, Tinto discovered that other external factors play a role in attrition. Those factors include job responsibilities, family obligations, and financial constraints. Also the motivations for going to college or returning to college are very different for the older student. On the other hand, the more mature students may be more serious about their education and take more responsibility for their education. However, the nontraditional student who commutes is less likely to feel integrated into the college community.

In the Bean and Metzner Model of Student Departure (1985), the background variables included age, enrollment status, residence, educational goals, high school performance, ethnicity, and gender. Other variables that encouraged persistence in goal attainment (degree completion) were academic variables including study habits, advising, absenteeism, and availability of desired majors. Also, environmental variables such as finances, employment, family support, and other responsibilities were important in the decision process that would lead to persistence. Positive experiences between the student and the institution create positive attitudes in the student, which lead to positive behavior and strengthen the rate of retention. Likewise, negative experiences between the student and the institution create negative attitudes, which lead to negative behaviors and weaken the likelihood of persistence. This model, unlike the Tinto (1975) model, placed more emphasis on the external factors and environmental variables. The Bean and Metzner (1985) model recognized there were external variables not associated with the institution that could have a significant effect on student attrition. They suggested that non-intellective factors played a significant role in students' decisions to drop out of college. Unlike Tinto (1975), Bean and Metzner (1985) put less responsibility for attrition on the institution because they believed other external factors played a major role in student attrition.

Cabrera, Castaneda, Nora, and Hengsler (1992) examined the Tinto (1975), and the Bean and Metzner (1985) attrition models to determine their validity. They used empirical statistical analysis to compare and contrast the two theoretical models. The researchers used a three-stage strategy, a longitudinal design, which involved collecting data at different times. They developed a questionnaire by examining several different survey instruments, and then, by conducting a pilot study, they came up with the most

appropriate questions for their research questionnaire. The last stage of the research involved doing a variety of statistical analyses of the data gathered. The population for the research was chosen from enrolling freshmen in the fall of 1998 at a large, southwestern, urban institution.

The results of the predictive validity for the Bean and Metzner (1985) Student Attrition Model indicated that of fifteen structural paths only six proved to have statistical significance. The predictive validity results for the Tinto (1975) Student Integration Model indicated that nine of the thirteen structural relationships were statistically significant. The two major factors that indicated statistical significances were academic and social integration, and goal and institutional commitment. The other factor that had statistical significance in both models was the “fit” between the institution and the student.

The findings of the Cabrera, Castaneda, Nora, and Hengsler (1992) research study indicated that both Tinto’s (1975) Student Integration Model and Bean and Metzner’s (1985) Student Attrition Model were valid instruments for predicting attrition of college students. Both models attributed student persistence to a complex set of interactions involving the student, the academic and social environment, and the institution. The relationship of the student to other students and faculty, the intent to persist, and the “fit” between the student and the institution were three of the factors in both models that proved to be valid indicators of student persistence. Although both models have statistical strength in predicting student persistence, Tinto’s Student Integration Model was the stronger of the two. In his model, 70% of the hypotheses were statistically significant as compared to 40% of the hypotheses in the Bean and Metzner model.

Three other concepts evolved from the Cabrera, Castaneda, Nora and Hengsler (1992) research study. First, the statistical findings indicated that both theories were valid for predicting persistence, which indicated that the theories were compatible and not mutually exclusive. Second, the study provided valid evidence that could help institutional researchers comprehend the complex set of institutional and noninstitutional factors involved in college students' decision to persist or to drop out of college. Third, the results of this research study could provide institutional researchers and policy makers information to help them make decisions about developing programs to identify students who may be at-risk and developing early prevention strategies for those at-risk students.

#### Characteristics of Students

In the 1999-2000 report of the National Center for Educational Statistics, 32% of the freshmen in four-year colleges and universities and 41% of the freshmen in community colleges were enrolled in developmental courses. How does this compare to the past? Who are these developmental students and how can they be helped to succeed academically?

Developmental education is not a twenty-first century phenomenon. Throughout the history of higher education, there has been a need to help underprepared students prepare for college-level coursework (Boylan, 2003; Goodchild & Wechsler, 1997; Higbee & Dwinell, 1996; Lundell & Higbee, 2002; Maxwell, 1979; Taylor, 2002). At Harvard in 1871, the university president, Charles Elliot, remarked that Harvard freshmen had poor spelling, displayed incorrectness in expression in writing, and were ignorant of the simplest rules of punctuation. In the early twentieth century, the emergence of secondary schools eliminated the need to aid young college students in preparation for higher education. However, unpreparedness persisted and the need for developmental

courses remained (Casazza, 1999; Goodchild & Wechler, 1997; Jehangir, 2002; Maxwell, 1979; Payne & Lyman, 1996).

In 1907, Harvard, Yale, Princeton, and Columbia reported that over half of their students failed to pass their respective entrance requirements. Therefore, there was a need to help students become prepared for college-level courses. Wellesley College established developmental courses in its curricula in 1894. Later, Harvard, Yale, Princeton, Cornell, Vassar, and Columbia decided to do the same (Casazza, 1999; Maxwell, 1979; Ross & Roe, 1986; Stahl & Boylan, 2003). Casazza reported that by 1909 there were over 350 colleges in the United States offering “how to study” courses for underprepared students. By 1915 there were departments in 350 colleges in the United States to prepare students for college admission’s standards, according to Maxwell (1979).

According to Boylan (2003), with the exception of a ten-year period from the late 1950s through the late 1960s, students have been tutored or have had remedial courses. During the 1950s and 1960s students who attended college were mostly from a white middle-class to upper-class background. Boylan contended that those who were from lower socio-economic backgrounds either received scholarships or were highly motivated and worked their way through college. However, the open-admissions policy of the 1960s changed the demographics of higher education. Casazza (1999) stated after the open-admissions policy of the sixties was adopted by policy-makers in institutions of higher education, a great number of students who were unprepared for college-level work were attracted to higher education. According to Ross and Roe (1986), by 1984, of the 2,800 colleges and universities in the United States, 2,300 offered developmental courses. They cited the results of the 1982 New Jersey Basic Skills Assessment Program, which

related that, of entering freshmen, 34% needed remedial reading. The same study found 30% of the entering freshmen were deficient in writing skills and computation and 31% were deficient in algebra. Ross and Roe (1986) stated that students who were enrolled in developmental courses were less likely to drop out of college than students who needed the courses but did not take them. According to Ross and Roe, students who took developmental courses made better grades than students who did not take developmental courses, and their retention rate was higher than that of students who did not need developmental courses.

According to Boylan (2003), college and university professors who lamented the time when students were prepared for college-level coursework may not have been aware that when they were students there was a brief time when colleges and universities were actually filled with the brightest and most highly motivated students. He stated before and since the decades of the 1950s and 1960s, students have been admitted to institutions of higher learning unprepared for college coursework and have had to be tutored (Boylan et al., 2003; Goodchild & Weschler 1997; Higbee & Dwinell, 1996 Taylor, 2002).

The research of Levine and Cureton (1998) indicated that one-third of all undergraduates had been enrolled in one developmental course. They said deans had reported an increase of students needing developmental courses within the past decade. In two-year institutions the portion had increased to 81%, while four-year colleges and universities noted a 64 % increase.

Levine and Cureton (1998) stated one-third of all freshmen enrolled in four-year colleges had qualified for placement in developmental reading and writing courses and were considered at-risk when they were not prepared to do regular college-level coursework. According to Barnett (2002), instructors who were surveyed said 24% of

students who failed had done so due to a lack of academic preparedness. Hardin (1998) stated one type of student who had been accepted into colleges and universities were not prepared for college-level courses because they were not enrolled in college preparatory courses in high school. Maxwell (1979) termed these students underprepared. They may have been admitted on athletic scholarships or may have been international students, nontraditional students, first generation students whose parents did not attend college, or students with learning disorders.

Nontraditional students may be older adults, international students, students with learning disorders, students with disabilities, or students who have dropped out of college because of job obligations, family responsibilities, or health reasons. The nontraditional students who are older may not have needed a college education when they started their careers but have now discovered they need a college degree to advance in their careers (Chase & Carter, 2002; Greenberg, 1997; Higbee, Lundell & Duranczyk, 2002; MacLellan, 2001; Maxwell, 1979). These students were placed in developmental reading, writing, or math courses to prepare them for regular freshmen courses.

According to Jehangir (2002), justifying developmental education in four-year postsecondary institutions presents a dilemma to some educators and legislators who have questioned the types of students who belong in colleges and universities. The debate over whether developmental courses belong in four-year colleges and universities is not a new debate. There have always been the “quality advocates” and the “access advocates” both from outside academe and from within.

Jehangir (2002) stated that developmental educators not only have to contend with resistance from outside postsecondary institutions, but also from within the ranks of academe. He said one group of educators and legislators advocates that postsecondary

education should be only for the best and brightest students who meet high standards of qualification. These legislators said that developmental programs, if available, have no place in four-year colleges and universities and should be offered only at two-year community colleges. According to Jehangir (2002), these accountability legislators and educators also advocated there should be a means of evaluating developmental programs for accountability purposes. The accountability legislators and educators need to justify that developmental programs are cost effective (Boylan & Saxon, 1998; Hardin 1998; Jehangir, 2002). Maxwell (1979) noted some states would not fund remedial programs, but they would subsidize developmental education.

On the other hand, another group of legislators and educators have advocated that postsecondary education should be accessible to all the people who desire a higher education. These advocates have promoted the philosophy that through developmental courses the gap between high school and college can be eliminated (Boylan & Saxon, 1998; Hardin, 1998; Jehangir, 2002; Payne & Lyman, 1996; Pedelty, 2002; Zwerling, 1976). Casazza (1999) stated it this way: “There has always been a tension between those who would provide access and those who fear it will lower standards” (p. 3).

Hardin (1989, 1998) established categories of developmental students to make it easier for policy-makers to understand the role developmental education plays in colleges and universities. She hoped that policy-makers would be less critical of developmental programs if they could understand the population of student these programs serve.

However, the debates continued and, in 1997, the National Association for Developmental Education recorded there were thirty-one states involved in such debates with policy-makers about the value of developmental education. These debates between policy-makers and educators continue in many states today.

According to the Americans with Disabilities Act of 1990 (ADA), Sub-chapter III-Public Accommodations and services operated by private entities, part (J) undergraduate, or postgraduate private school, or other places of education, institutions of higher education must make arrangements for students who qualify for their services. Students with disabilities are identified in the fourth category in Hardin's list of students who are classified as developmental. The recommended accommodations for disabled students may include special classes and or tutoring services for students with diagnosed learning disabilities. Diagnosed learning disabilities may include Reading Disorder, Mathematics Disorder, Disorder of Written Expression, Learning Disorder NOS [not otherwise specified], Expressive Language Disorder, Phonological Disorder, Autistic Disorder, Asperger's Disorder, Attention-Deficit/Hyperactivity (ADHD), or Attention Deficit Disorder (ADD) (DSM-IV, 1995).

Other students who required developmental courses had a high school grade point average (GPA) of 3.0 and a composite ACT score of at least 21, or a combined SAT score of 1,000, were high-risk or at-risk because they were unprepared for college-level courses. These students may qualify for developmental courses as a result of taking a standardized placement test and need developmental courses to meet the requirements for regular college-level coursework. According to a report prepared by the National Study of Community College Remedial Education, it was possible for students with above average grades in high school to have entered college with deficiencies in math and English skills (McCabe, 2000). The Associated Press (2003) reported freshmen placed in developmental courses stated they were in honors classes at their respective high schools. Their GPA and standardized test scores met the qualifications for academic-based scholarships, yet they did not meet the qualifications for college entry-level courses.

In “Report: Study Habits of Freshmen Decline,” the Associated Press (2003) stated that although American freshmen entered college with the worst study habits in fifteen years, more than 45% of them said they had maintained an “A” average in high school. The report attributed the high grades to grade inflation. In the report, students stated they had taken advanced placement courses in high school and thought they were prepared for college only to find out the coursework in college was much more of a challenge than their high school assignments. According to Hebel (2004), the results of the California State report on the program to gauge high-school students’ readiness for college indicated that, “...many students have more work to do to become proficient in mathematics and English” (p. 1). The results showed that of 115,000 students who took the math portion of the program’s test, 55% scored high enough to enroll in college-level math courses. Of the 150,000 students who took the English portion, only 22% scored high enough to qualify for college-level English courses. According to Selingo’s report (2000), on the first national report card, most states received C’s, and B’s were close behind but few A’s. According to the report by Schmidt (2004) an analysis of the past ten-year trends in the area of college participation, revealed the likelihood that ninth graders would enroll in college by age nineteen had declined.

According to Roueche and Kirk (1974), “...[C]hances for academic success in college are greatly enhanced for marginal students because of their having available such [developmental] programs” (p. 6). Their research focused on the comparison of students enrolled in developmental classes and students who were not placed in developmental courses. The authors found students who were enrolled in developmental courses earned a mean GPA of 2.66 compared to a mean GPA of 1.96 for high-risk students who were not enrolled in any developmental courses their freshman semester. This study

confirmed that developmental courses could prepare at-risk students, or students who are academically underprepared, which would lead them to positive academic success and ultimately, to graduation.

According to a study by Moore, Jensen, and Hatch (2002), a comparison of the retention rate of developmental students at two-year and four-year colleges revealed that, on average, 37% of students enrolled in developmental courses at four-year institutions were retained. At public four-year institutions, 29% of the students in developmental courses were retained, whereas in private four-year institutions, 42% of the students enrolled in developmental courses were retained. This study not only compared the retention rates of developmental students at two-year and four-year institutions, but it also compared the retention rates of White students, Latino students and African-American students. The study also found the retention rate of African-American students at four-year private institutions exceeded that of White students and the national average.

The Moore, Jensen, and Hatch study (2002) supported the findings of the Tinto (1987) model of retention. According to Tinto's model, the more the characteristics of the student were congruent with the values, goals, and characteristics of the institution the better the chances of retention.

According to Dr. Bob McCabe, a ten-year official with the College Board, neither the ACT nor the SAT standardized test, was intended to be used as instruments for placement purposes (WVADE, 2000). The purpose of these tests was to screen those who should be excluded from a testing requirement. However, Parks (2001), in her report from the West Virginia Association for Developmental Education (WVADE) to the West Virginia state legislature, cited that, the former State College System of West Virginia policy included minimum ACT or SAT scores in math and English. At present

scores from both the ACT and the SAT are used to determine if students are academically prepared for college-level courses.

Arendale (2002) gave a brief history of developmental students and developmental education through six phases of higher education. Between 1600 to the 1820s, privileged White males were those being educated in America. The method for bringing those who did not meet academic expectations to academic standards was tutoring. From the 1820s to the 1860s, the students needing academic help were privileged White males, and the method of instruction was pre-collegiate preparatory academics and tutoring. From the 1860s to the mid-1940s, those needing extra help with academics in order to be more prepared for college-level work were mostly White males, and the teaching methods used were remedial education classes within college preparatory programs and tutoring.

According to Arendale (2002), by the mid-1940s the student population had changed dramatically. The underprepared student population included traditional white males, nontraditional males and females, first-generation college students, economically-disadvantaged students, and students of color. The remedial programs included remedial education classes in the institutions of higher education, tutoring, and compensatory education. According to Arendale (2002), between the 1970s and the 1990s the student population increased in the number of older students who were returning to postsecondary education or were enrolling for the first time in colleges and universities. Institutions met the needs of these students with developmental education, learning assistance, tutoring, and supplemental instruction programs. The last phase was from the mid-1990s to the present. The group of students needing help academically included the previously-mentioned students and an increasing number of students who wanted a

deeper understanding of the content in their college courses. The methods employed to better prepare these students were developmental education with enrichment activities classes and programs. Each phase of developmental education from the mid-1940s until the present brought an additional student subpopulation that had special academic needs.

Maxwell (1979), in her history of remedial programs, was more specific and included students with diagnosed learning disabilities and handicapped students. Maxwell defined *underprepared* students as those who were below “typical” students in skill, knowledge, or academic ability in the particular college or university in which they were enrolled. By this definition, the student’s placement would be determined by the standards of the institution. The underprepared student could qualify for developmental courses in one institution and not in another. Maxwell attributed grade inflation in public elementary and secondary schools as a contributor to unpreparedness in postsecondary institutions. She concluded that there continued to be a need for remedial programs in higher education.

Pascarella and Terenzini (1991) recorded the results of the Kulik, Kulik, and Shwalo (1983) study that found on average students who were poorly prepared and who were exposed to special college programs designed for underprepared students had a GPA higher than unprepared students who were not in those programs. They estimated the persistence rates of these students and found that students who were underprepared and exposed to intervention programs had an 8% advantage in persistence over students who were underprepared but not given intervention. Their research was conducted by doing metaanalysis of 60 published and unpublished studies of the effectiveness of special college programs constructed to provide academic assistance and interventions to students who were underprepared.

The National Association for Developmental Education (NADE) Executive Board reported in July 1998 that a study conducted by the National Center for Educational Statistics in 1995-1996 revealed that about three-fourths of postsecondary institutions that enrolled freshmen offered at least one developmental reading, writing, or math course. An analysis by institutional type, revealed that 100% of all public two-year and 81% of public four-year institutions of higher education offered developmental courses. Two factors affected the enrollment in these courses significantly: the lower mean socioeconomic level of the student population and the lower admission standards. The 1995-1996 report revealed that 445,220 freshmen were enrolled in one or more developmental courses.

From 1990 to 1995, of the institutions analyzed, 39% had reported an increase in enrollment; 50% reported enrollment had stayed the same; and 11% reported a decrease in enrollment. The purpose of the report by the executive board of NADE was to provide information to support a proposal that there is a need for developmental education programs at all four-year postsecondary institutions. Board members gave five reasons for their proposal. First, regardless of the college entrance requirements, there will always be students who will need developmental course work. Second, regardless of the high school graduation requirements, there will be students who will need developmental course work in college. Third, students who are from low socioeconomic backgrounds would have to enroll at a two-year institution first and would then run the risk of reducing their educational opportunities at a four-year institution because they were poor. Fourth, by restricting developmental courses to two-year institutions, adult students would have to enroll in a two-year institution just because they had been out of school for several years. Last, two-year institutions are not always located near enough for all students to

commute. The resolution of the board was that all postsecondary institutions offer developmental courses regardless of the type of institution or the size.

Chung (2005) stated 30% of all students enrolling in postsecondary institutions require some form of “developmental” coursework. Chung questioned why, when budget cuts occur or the political climate changed the status, legitimacy and perceived value of developmental education programs were quickly and easily challenged. According to Boylan (2002), “If developmental education is to be successful it must be an institutional priority supported by the institutional community” (p. 7). Boylan further stated that developmental education must be a part of the institutional planning process, which would include budgeting. He also suggested developmental programs be centralized to be successful and to provide the best environment for optimization of student academic success. Institutions which allocate funds for programs that provide services to enhance students’ academic success and improve retention are making a wise decision and investment (Upcraft, Gardner & Barefoot, 2005).

### *Gender*

Although women were excluded from many elite colleges and state universities, women have been participants in higher education since the late 1800s. Ogren (1997) explained that in 1898-1899, women constituted the majority of normal school students. She stated that at Fitchburg Normal in Massachusetts the ratio of female to male students was 14:1. She gave a history of normal schools in Wisconsin and the impact they had on higher education for women. Ogren stated by 1892 the normal schools in Wisconsin offered liberal arts curriculum that could be useful for both men and women who were interested in becoming teachers or having a career in business.

Bean and Metzner (1985) found that as the role of women changed after World War II, more women had been accepted into careers that were once exclusively male-dominated. With the ability to pursue different career choices, more women chose higher education to prepare themselves better for the workplace. As a result, women now constitute the majority of part-time and full-time student enrollment in colleges and universities and a majority of the nontraditional enrollment. In their retention study according to Pascarella and Terenzini (1991), with institutional characteristics and personal traits controlled for, institutional size had a slightly positive influence for women as opposed to a slightly negative influence for men.

Chumchal (1996) studied female African-American students in one community college. Her study involved interviews, observations, and journaling. She discovered women achieve greater academic success if instructors were more connected, more understanding, and more accepting. Chumchal discovered that nontraditional African American women enroll in college courses after a long, often multifaceted, complex process. She found that once in college these women experience significant growth in self-worth, determination, and independence. Her study was conducted by analyzing data using the constant comparative approach by Bogdan and Biklen.

Astin (1976) revealed that women were much more likely than men to complete their bachelor's degree in four years. He noted women showed a persistence rate 5% higher than males. When reviewing the reasons for dropping out of college, Astin recorded that women gave marriage as a reason for dropping out of college three times more often than did men.

In the review of literature, gender was not a persistence factor in most studies. In the community college studies, gender was a negative factor in persistence, especially

in women who were married and had family responsibilities. In the Astin (1976) study, women had a higher persistence rate than men although women were three times more likely than men to give marriage as a reason for dropping out.

### *Race*

A study by Moore, Jensen, and Hatch (2002) compared the retention rates of developmental students at two-year and four-year institutions, but it also compared the retention rates of White students, Latino students and African-American students. They found the retention rate of African-American and Latino students at four-year private institutions exceeded that of White students and the national average. Although enrollments of minority students in developmental courses is higher than White students, the retention of minority students is disproportionately lower for Latino (22%), and African-American (17.4%) as compared to White students (31.3%). In 2001, this retention rate exceeded the 10% retention rate nationwide. However, according to this study the attrition rate of African-Americans may not be related directly to enrollment in developmental courses since the attrition rate of African-Americans students not enrolled in developmental courses is proportionately higher than that of White students. In 1999 the college graduation rate for White students was 59% and for African-American students was 38%. By contrast, the retention rate of African-American students at four-year institutions was 32.9%, which is almost double that of African-Americans at two-year institutions, rate of 17.4% according to Moore (2002). According to the literature, when minority students are enrolled in a four-year institution and placed in the developmental courses to succeed academically, their retention rate is greatly increased.

## *Age*

The traditional age for college students is 18-22. Since 1940, more nontraditional students (over 25 years old) have been enrolling in colleges and universities. Many servicemen took advantage of the GI Bill to further their education after returning from service in World War II. Also, many women, who had then entered the workplace, enrolled in college to become better equipped for careers that were previously male-dominated. Is age a factor in persistence? Tinto (1987) explained that older students face greater difficulties in persisting to graduation. Many older students work full-time, have family responsibilities, and may feel they do not fit in with a more traditional campus. Older nontraditional students usually commute to classes, and they may feel more isolated. These are negative factors in persistence. Another factor for higher attrition rates among students 25 and older is that many are part-time rather than full-time. There are higher attrition rates for part-time students than for full-time students. Lufi (2003) based his study on the Tinto longitudinal model for student attrition. He found that among the nonacademic variables, age was a factor in attrition. A positive factor in student persistence for older students was having a supportive family environment. In his study, Lufi involved Israeli students. Of the 166 participants that were surveyed, 140 persisted to graduation and 26 failed to persist. The mean age was 23.3, which was higher than the mean age of traditional students since Israeli students enroll after completing military service. However, there was no significance in mean age between those who persisted (23.54) and those who failed to persist (23.04). The Adult Student Persistence Questionnaire II (ASPQII), was used by Dr. Heath-Thornton at Roberts Wesleyan College in Rochester, New York (2002). Her survey was an adaptation of the Adult Persistence Questionnaire (ASPQ), which was piloted by Greenberg in 1995. The

purpose of the Greenberg (1997) study was to assess the factors that led to persistence in adult learners in a public community college. Greenberg's pilot was to determine the validity and reliability of the scales measuring the factors associated with college persistence and to make revisions where necessary to the instrument. His sample was students between the ages of 35 and 55 who had completed an associate's degree within the past five years. Follow-up interviews were conducted to clarify any questions that were vague. The revised version of the ASPQ included the following constructs: college environment, finances, institutional commitment, instructors, and academic integration (Greenberg, 1997).

The review of literature does not support age alone as a factor in failure to persist. Older nontraditional students' failure to persist is attributed to several complex factors including, part-time status, enrollment in a community college, financial constraints, job obligations, and family responsibilities.

#### *High School GPA*

Precollegiate characteristics such as high school GPA and high school class rank have been positive factors in predicting college student persistence. Pascarella and Terenzini, (1991) stated, "A student's grades are probably the single most revealing indicator of his or her successful adjustment to the intellectual demands of a particular college's course of study" (p. 388). Tinto (1975) reported that high school grades and high school class rank were stronger predictors of persistence than scores on standardized tests. Astin (1976) reported if the two factors of high school GPA and high school class rank were both high, the positive rate of persistence increased significantly. Two early findings reported by Bean and Metzner (1991) stated that commuter students have lower high school GPAs and lower class rank than residential students. Also, older students

often have lower high school GPAs and class rank than traditional students. Other reports show that high school class rank was positively related to persistence in a national sample of students in two-year colleges. Bean and Metzner summarized their findings of several retention studies by stating, “In general, measures of high school academic performance currently seem to be among the strongest pre-enrollment predictors of persistence for students at both residence-oriented and commuter institutions, although extremely limited research has been conducted with older college students” (p. 497). Astin (1976) showed students’ persistence was positively related to high school GPA in studies at residence-oriented four-year colleges and universities. He stated, “... [that] student’s high school grades would prove the most consistently potent predictor of college attrition is not surprising, considering that prior research has consistently shown that high school grades are the best predictor of college grades” (pp. 30-31). Astin’s chart showed the lower the grades the higher the attrition rate. He said that although high school class rank was another factor in predicting students who would drop out, the relationship was not as strong as the relationship between high school grades and persistence. The one exception was African-American students who attend white colleges. For African-American students high school class rank, according to Astin, was a more potent predictor of dropping out than average high school grades.

In the Muller study (1996), the results of the data analysis indicated that high school GPA was the best predictor of student persistence through two semesters. The Longmore-Gable study (1997) reported the strongest correlation between independent variables was between high school GPA and class rank. In her study, the strongest correlation overall was the correlation between high school GPA and number of semester hours completed. In the Thorn study (1998), one finding was consistent for the three

institutions involved in the study - Ohio Valley College, David Lipscomb University and Rochester College - and that was students who were members of the Church of Christ had higher mean ACT scores and higher high school GPA means than students who indicated no affiliation with the churches of Christ. These three studies confirm the findings of Tinto and others who reported high school GPA and high school class rank were strong predictors of college student persistence.

As mentioned earlier in this chapter, colleges in colonial times were associated with religious organizations. Herst (1997) cited that Harvard was associated with the Congregational church, while Yale was affiliated with the Presbyterian. The college of William and Mary was Anglican. Schools of higher education were associated with the predominant religious sects in their area for example, Baptists, Anglicans and Quakers in New England, and Presbyterians and Quakers in Virginia. The goal of these institutions was to educate young men to become ministers in the churches in the colonies. Though the goal of education in colonial times was different, the trend for college students to seek a holistic education, which includes a spiritual component rather than just academics, is seen in the rise in enrollment at intentionally Christ-centered colleges. According to Winters (2004), since 1997, enrollment has increased 27% at Christian colleges as compared to an 8% increase in enrollment at all degree-granting institutions in the same time period.

In early studies by Astin (1971), Astin and Panos, (1969), and Newmen (1965), students with religious affiliation were the more likely to persist to graduation than students of comparable abilities who expressed no religious affiliation. Later studies by Heath-Thornton (2002) and Thorn (1998) confirmed the findings of Astin and others that

students who express a religious affiliation persist to graduation and have a lower dropout rate than students who express no religious affiliation.

The Heath-Thornton study focused on the persistence of adult learners at a private, liberal arts, Christian college. The major factors examined in the two studies were support and encouragement, college services, instructors, and social integration (Greenberg, 1997; Heath-Thornton, 2002). Heath-Thornton received permission from Greenberg to adapt the ASPQ to her study and make needed modifications. The modifications Heath-Thornton made included a spiritual component to examine the role spiritual elements and a spiritual environment played in the persistence of adult students at a religious institution. The ASPQII was refined to be administered to middle-aged adults who had graduated from a Christian liberal arts college (Heath-Thornton, 2002). Permission was received from Heath-Thornton to modify and adapt the ASPQII for the current research study.

Upcraft, Gardner, and Barefoot (2005) gave an initial definition of academic success as the successful completion of courses taken in the first year and continuing enrollment into the second year. However, in their broader definition they include eight elements: intellectual competence, interpersonal relationships, identity development, career choice, health, spiritual development, multicultural awareness, and civic responsibility. They promote creating a balanced environment for the first-year student, which included spiritual development. Upcraft, Gardner and Barefoot noted most students come to college with some kind of faith and spiritual values, and until recently this characteristic was ignored or only seen from a secular point of view. They stated this spiritual dimension was not only a part of who first-year students are, but faith, spirituality and a value system helped students adjust and cope with college life. The

current study, based on a review of the literature, looked at the academic success of students enrolled in developmental courses and students not enrolled in developmental courses at six faith-based institutions.

### Summary

The literature review gave a brief history of four-year colleges, two-year colleges and retention studies related to these institutions. It included a history of private, liberal arts, church-affiliated colleges and retention studies related to them. Following that section was a section with a brief history of two retention models: the Tinto (1975) student integration model and the Bean and Metzner (1985) student attrition model. The next section discussed developmental educational programs, developmental students, their characteristics and their needs. The last section focused on the predictive variables of gender, age, and high school GPA.

## Chapter 3

### Methods

#### Purpose of the Study

The purpose of this study was to analyze a series of variables as predictors of enrollment in developmental courses in select institutions. This study attempted to determine if there are factors present at the time of enrollment of college freshmen at six private, church-affiliated, postsecondary institutions that would predict placement in one or more developmental courses their freshmen year.

The grouping variable (dependent variable) was enrollment in one or more developmental courses. The predictor variables (independent variables) were gender, race, year of enrollment, high school grade point average (GPA), age at enrollment, withdrawal from an institution, year of graduation, transfer to an institution, attainment of a bachelor's degree, transfer from an institution, and age at graduation.

#### Research Design

This research project was a survey research design (Babbie, 1973; Campbell & Stanley, 1963; Fowler, 2002; Johnson & Christensen, 2000; McMillan & Wergin, 2002). The investigator examined if there were a statistically significant predictive relationship between the graduation rate of students involved in developmental courses and students enrolled in college-level courses as freshmen from six select private postsecondary institutions. Primary data was collected from completed alumni survey questionnaires. Consent forms were sent with the questionnaire and confidentiality of results were assured (Cone & Foster, 1997). This research study was a retrospective study since the investigator attempted to determine if the predictive variables present in first-year students in private, postsecondary institutions determine enrollment in developmental

courses and the effect, if any, they had on persistence to graduation (McMillan & Wergin, 2002). The research involved six institutions and their respective entering freshmen classes from 1996-1998.

### Sample

The sample for this research study was  $n = 414$  alumni, from six select institutions, who responded to the questionnaire, from a total population of  $N = 2304$  students enrolled as first-time freshmen in the fall of 1996, 1997 and 1998. Six select colleges were chosen for this study: Bluefield College in Bluefield, Virginia; Kentucky Christian University in Grayson, Kentucky; Lees-McRae College in Banner Elk, North Carolina; Milligan College in Milligan College, Tennessee; Ohio Valley University in Vienna, West Virginia; and Tennessee Wesleyan College in Athens, Tennessee. Each of these colleges is a private, liberal arts, church-affiliated, postsecondary institution with an enrollment of less than 1,000 full-time equivalent (FTE) students. All six institutions are members of Appalachian College Association (ACA) and all offer developmental courses.

Bluefield College is located in southwestern Virginia, is associated with the Baptist Church, and has an enrollment of 820 (Appalachian College Association 2001 Viewbook). Kentucky Christian University is located in the eastern part of Kentucky, is associated with the Christian Church, and has an enrollment of 571 (Appalachian College Association 2001 Viewbook ). Lees-McRae College is located in Banner Elk, North Carolina, is affiliated with the Presbyterian Church (U.S.A.), and has an enrollment of 710. Milligan College is located in Milligan College, Tennessee, is associated with the Christian Church (Disciples of Christ), and an enrollment of 900 (Appalachian College Association 2001 Viewbook). Ohio Valley University (OVU) located in Vienna, West

Virginia, is associated with the Churches of Christ, and has an enrollment of over 580 in the fall of 2005 (according to the registrar's office). Tennessee Wesleyan College is located in Athens, Tennessee, is affiliated with the United Methodist Church, and has an enrollment of 718 (Appalachian College Association 2001 Viewbook).

Participants were divided into two groups according to their response on the survey. Those respondents who indicated they had been enrolled in one or more developmental courses their first year were placed in group one. Group two was comprised of those alumni who responded they had not been enrolled in any developmental courses their first year. All alumni who enrolled in the fall of 1996, 1997, or 1998 received a self-report survey questionnaire to be completed and returned to the researcher (Babbie, 1973; Fowler, 2002; McMillan & Wergin, 2002). The study relied on the voluntary self-reported student data received from the questionnaires that were sent to alumni whose addresses were available to the registrar or the director of alumni relations of each institution. Those participants who voluntarily filled out the College Student Persistence Questionnaire (CSPQ) and returned it constituted the research sample (Babbie, 1973; Fowler, 2002).

### Research Questions

The following research questions relating to enrollment in developmental courses, gender, race, year of enrollment, high school GPA, age at enrollment, withdrawal from an institution, year of graduation, transfer to an institution, attainment of a bachelor's degree, transfer from an institution and age at graduation were addressed in this study.

1. Is there a significant predictive relationship between persistence to graduation and group membership in a developmental course in college?

2. Is there a significant predictive relationship between the gender of freshmen and group membership in a developmental course in college?
3. Is there a significant predictive relationship between the race of freshmen and group membership in a developmental course in college?
4. Is there a significant predictive relationship between the year of enrollment of freshmen and group membership in a developmental course in college?
5. Is there a significant predictive relationship between the age of freshmen and group membership in a developmental course in college?
6. Is there a significant predictive relationship between the high school GPA of freshmen and group membership in a developmental course in college?
7. Is there a significant predictive relationship between freshmen who withdrew from the institution and group membership in a developmental course in college?
8. Is there a significant predictive relationship between the year of graduation and group membership in a developmental course in college?
9. Is there a significant predictive relationship between students who transferred to the institution and group membership in a developmental course in college?
10. Is there a significant predictive relationship between students who obtained a bachelor's degree and group membership in a developmental course in college?
11. Is there a significant predictive relationship between students who transferred from an institution and group membership in a developmental course in college?
12. Is there a significant predictive relationship between the age at graduation and group membership in a developmental course in college?

### *Measurement Tool*

The measurement tool used for the survey questionnaire was the CSPQ (see Appendix A). Several of the items in the CSPQ were adapted from the Adult Student Persistence Questionnaire II (ASPQII), which was used by Dr. Heath-Thornton at Roberts Wesleyan College in Rochester, New York (2002). Her survey was an adaptation of the Adult Persistence Questionnaire (ASPQ), which was piloted by Greenberg in 1995. The purpose of the Greenberg (1997) study was to assess the factors that led to persistence in adult learners in a public community college. Permission was received from Heath-Thornton to modify and adapt the ASPQII for the current research study (see Appendix B).

Demographic data and research data collected corresponded to the research questions. The measurement tool that was used to collect the primary data from the alumni participating in the study was a modified, author-generated questionnaire. It was an adaptation of the ASPQ and the ASPQII (Greenberg, 1997; Heath-Thornton 2002). The CSPQ contained 17 questions. Survey questions 1, 4, and 17 obtained the demographic information of gender and age, which related to research questions 2 and 4. Survey question 5, 6, 7, 8 and 9 related to the grouping variable (or dependent variable) in research question 1 about enrollment in developmental courses as freshmen. Survey question 5 asked, “Were you enrolled in developmental courses your freshman year?” The answer was dichotomous “Yes” or “No.”

Survey questions 6, 7, 8, and 9 addressed research question 1 concerning enrollment in the developmental courses of reading, writing and math. These survey questions identified the types of developmental courses the student had been enrolled in and the number of semesters the student was enrolled in developmental courses. These

four survey questions were adapted to measure academic integration and courses by identifying the developmental courses taken and the number of semesters the student was enrolled in developmental courses (Cabrera, Nora & Castaneda, 1993, Tinto, 1975). model, which stated that students will be more likely to persist to graduation in institutions that promote a learning environment and provide an academic environment where the student feels included. By providing students with the developmental courses to help them prepare for college-level course work, colleges are making clear the institutional requirements needed for course completion and completion of programs of study (Tinto, 1975).

Survey questions 11, 12, 14 and 16 fit Tinto's construct of institutional commitment. According to Tinto's (1975) retention model, students will persist in institutions that value them as part of the institution. The survey questions 11, 12, 14, and 16 also fit the construct of institutional fit and quality according to the Bean and Metzner model (1985). These questions were stated as follows: (11) "During the period you were attending this institution, was there ever a time you seriously considered withdrawing?" (12) "If 'Yes,' why? For what reasons did you decide not to withdraw?" (14) "Did you transfer to this college?" (16) "Did you transfer from this college to another college for degree completion?"

Survey questions 13 and 15 addressed research question 1. Survey question number 13 asked, "What year did you graduate from college?" The choices given were 2000, 2001, 2002, 2003, 2004, or "other," (please specify). Survey question number 15 asked, "Did you graduate with a bachelor's degree?" Both of these questions measure the construct of degree completion and the length of time for degree completion. These two survey questions measured any significant differences in the graduation rate

of students enrolled in developmental courses and students who were not enrolled in developmental courses. These constructs corresponded to Tinto's (1975) findings that students will persist to graduation in institutions that make clear the academic requirements for completion of programs.

Survey questions 5, 11, 14, 15 and 16 were all dichotomous items requiring an answer of "Yes" or "No." Survey questions 12 (a) and (b) were open-ended questions requiring input on factors which may or may not have led the student to withdraw from the institution.

#### Pilot Study

The questionnaire was piloted at OVU in Vienna, West Virginia. There were 50 undergraduate participants involved in the pilot study. Factor analysis was used to determine the content validity of the survey questions. Internal consistency of the questionnaire was determined by the "Alpha" measure also known as Coefficient Alpha or Cronbach's Alpha. Cronbach's coefficient alpha can be used on questions that are dichotomous or nondichotomously scored (Johnson & Christensen, 2000). The pilot study was conducted at OVU to determine face and content validity, to determine the amount of time it would take to fill out the questionnaire, to gather feedback on clarity of questions, and to further refine the questionnaire. The criteria for the pilot study were students that were enrolled at OVU in the traditional undergraduate program and would be eligible for graduation in May 2005 or December 2005. Undergraduate college seniors were chosen for the pilot research study because their responses would be similar to the responses given by those participating in the research study. According to the analysis the measurement tool had content validity.

Adjustments were made to the research measurement tool based on the feedback from the pilot study participants. The original Question #5, “Were you enrolled in college preparatory courses in high school?” was eliminated. Question #11, “What was your approximate high school GPA at graduation?” was moved to #3 to keep it consistent with the demographic information and separate from the college information. The words **to** in #14 and **from** in #16 were bolded to clarify if students had transferred to the institution or from the institution during their academic career. “English” was changed to “writing” to avoid confusion with the college level English courses. Brackets were added instead of blanks in the answer portions to make the placement of answers more discernable (Babbie, 1973). No other changes were made to the document.

#### Data Collection

There was one method of data collection utilized in this research. Primary data and secondary data were collected through the process of a self-report questionnaire. A cover letter (see Appendix C), which included the approval from the Institutional Review Board (IRB), terms of participation for the alumni, and the survey questionnaire with a self-addressed stamped envelope were sent to alumni of each of the six cooperating institutions. Each institution acquired the addresses of the alumni of its respective institution and sent the necessary directory information to the researcher. However, Kentucky Christian University sent the questionnaires and postcards from its own institution. The CSPQ was mailed to the total population (N = 2304) of college freshmen enrolled in six select institutions in the fall of 1996, 1997, and 1998. The CSPQ was mailed to each participant in an envelope containing a cover letter, which explained the nature of the research study, a consent form to ensure confidentiality which allowed the

researcher to use the information gained from the questionnaire for the study, a survey questionnaire, and a return stamped envelope (Babbie, 1973; Fowler, 2002).

Those alumni who received the CSPQ were encouraged to respond within two weeks after receiving the questionnaire. The questionnaire surveys were placed by the respondents in self-addressed stamped envelopes provided by the researcher and sent to the researcher's home address. After two weeks, a reminder postcard was sent to each of the participants to complete the questionnaire.

### Data Analysis

Discriminant analysis was the main form of data analysis. Discriminant analysis is similar to multiple regression except it uses two or more predictors to predict membership in one of two groups. In this study, the predictive variables (independent variables) were analyzed to determine which, if any, of them contributed to the placement of unprepared students (Field, 2003; Grimm & Yarnold, 1998; Nicol & Pexman, 1999). Since the outcome variable (grouping variable) in this study was dichotomous and the predictors were both dichotomous and continuous, the use of discriminant analysis was an appropriate method of statistical analysis.

### Summary

Chapter 3 described the method of the research study. It consisted of the purpose of the study, the research design, sample, research questions, measurement tool, data collection, and data analysis. This was a survey research design. The population of the study consisted students enrolled as freshmen in the fall of 1996, 1997, and 1998 in six select postsecondary institutions: Bluefield College, Kentucky Christian University, Lees-McRae College, Milligan College, Ohio Valley University, and Tennessee Wesleyan College. The grouping variable was enrollment in developmental courses. The

predictive variables were gender, race, year of enrollment, age at enrollment, high school GPA, withdrawal, year of graduation, transfer to the institution, attainment of a bachelor's degree, transfer from the institution, and age at graduation.

Data for the research was gathered from participants from self-report questionnaires. The data was obtained and analyzed to determine if any of the predictive variables determine placement in developmental courses for first-year college students. The data collected was also used to examine if there were a statistical significant predictive relationship between persistence to graduation for students enrolled in developmental courses and students enrolled in college-level courses their first year.

## Chapter 4

### Presentation and Analysis of the Data

The purpose of this study was to analyze a series of variables as predictors of enrollment in developmental courses in select institutions. This study attempted to determine if there were variables present at the time of enrollment of college freshmen in select institutions that would predict placement in one or more developmental courses during their freshmen year.

The grouping variable (dependent variable) was enrollment in one or more developmental courses. The responses were reported on the individual questionnaires by a “Yes,” or “No.” The predictor variables (independent variables) were gender, race, year of enrollment, age at enrollment, high school grade point average (GPA), withdrawal, year of graduation, transfer to the institution, attainment of a bachelor’s degree, transfer from the institution, and age at graduation.

The sample for this study consisted of  $n = 414$  alumni (24%) of the population, ( $N = 1740$ ), who were enrolled as freshmen in one of six private, church-affiliated institutions during the fall of 1996, 1997 or 1998. Each institution was chosen on the basis of meeting the following criteria: private, under 1000 full-time equivalent (FTE) enrollment, church-affiliated, member of the Appalachian College Association (ACA) and the offering of developmental courses.

A representative from each institution was contacted by phone, e-mail, and letter. Five of the institutions provided directory information for the mailing of the self-report questionnaires. Kentucky Christian University did not provide the directory information; however, the officials agreed to send out the questionnaires and postcard reminders from their institution. The first mailing went out in June 2005 to the alumni from each of the

participating institutions. A total of 2304 packets was sent in the first mailing. This included a letter of participation, an explanation of the research study, an assurance of confidentiality, Institutional Review Board (IRB) approval, the questionnaire, and a self-addressed stamped envelope. There were 374 usable questionnaires returned for a return rate of 19%. There were 254 returned for wrong addresses (11%). In August, 2005 a request was made to the IRB for an amendment to change the method of administering the questionnaire from a hard copy sent through the mail to questionnaires placed on a web page. IRB approval was obtained to put the questionnaires on a web page.

A web page was purchased and the letters of participation and the questionnaires for each of the six participating institutions were placed on the web page ([www.collegepersistence.com](http://www.collegepersistence.com)). A postcard was sent to invite the participants to go to the web page, answer the questionnaire, and submit the response. This mailing was sent to 2050 alumni. Since there was no way to track who had responded to the previous mailing, only those that were returned for wrong addresses were eliminated from the mailing. The response rate increased by 35 to 409 (23%). A second postcard requesting participation in the study at the web site was sent two weeks after the first postcard. After corrections were made for wrong addresses, the number of postcards sent were N= 1740. The total response was n = 414 (24%) returned usable questionnaires from the three mailings.

Although a 24% response rate appears low, a review of survey literature will yield a wide range of response rates (Babbie & Hardin, 2002; Doyle, n.d.; Fowler, 2002; Johnson & Christensen, 2000; Rubin & Babbie, 1989). In research studies involving a non-random non-probability sampling technique which relies on voluntary responses from an entire population, a response rate of 10%, though low, is considered sufficient to

yield valuable information (Rubin & Babbie, 1989). Response rates depend on the initial total population of the research study. The larger the population the smaller the response rate needed to assure usable information and accurate results of the survey. The smaller the population the larger the response rate is needed to assure accurate results (Johnson & Christensen, 2000). “Once a population reaches a certain size, the size of the sample necessary to estimate opinions within a few percentage points is fairly constant” (Doyle, n.d.) (p. 19). For example, a population of 1200 to 100,000 only needs responses from 291-384 participants (Johnson & Christensen, 2000). A lack of response bias is more important than a high response rate. In a non-probability study, a response rate of 15% would not be any more statistically accurate than a response rate of 50% (Fowler, 2002; Rubin & Babbie, 1989).

The final distribution from among the six participating institutions was as follows: Bluefield N = 327, returned questionnaires n = 49 (15%), 277 (85%) were not returned; Kentucky Christian University N = 391, returned questionnaires n = 104 (27%), 287 (73%) were not returned; Lees-McRae N = 533, returned questionnaires n = 57 (11%), 476 (89%) were not returned; Milligan N = 263, n = 111 (42%) returned questionnaires, 152 (58%) were not returned; OVU N = 197, n = 35 (18%) returned questionnaires, 162 (82%) did not respond; and Tennessee Wesleyan N = 285, n = 58 (24%) returned questionnaires, 176 (75%) did not respond. There were 40 responses to the Web page from the six institutions, which increased the total response rate to n = 414 (24%).

#### Descriptive Data

The descriptive data section consists of the demographic data. The demographic data obtained from each respondent was (a) gender, (b) race, (c) year enrolled, (d) age at enrollment, (e) high school GPA, and (f) age at graduation. Of the 414 participants, 144

(34.8 %) were males and 270 (65.2%) were females. The majority that participated were White (Caucasian) 397 (95.9%); 3 (.7%) were African American; 4 (1%) were Asian; 3 (.7%) reported being Hispanic; 2 (.5%) were Native American and 3 (.7%) reported other. The age range of the participants was 16-58 with 297 (71.7%) of the respondents reported being 18 years old when they enrolled as freshmen. Fifty-five (13.3%) were 17 when they enrolled as freshmen and 29 (7%) reported being 19 when they enrolled as freshmen. Of the respondents 133 (32.1%) enrolled as freshmen in 1996; 133 (32.1%) enrolled in 1997 and 146 (35.3%) enrolled in 1998. The reported high school GPAs ranged from 1.90-4.00 on a 4.0 scale where 4.0 = A, 3.0 = B, 2.0 = C and 1.0 = D letter grades. Of the participants, 101 (24.8%) reported having a high school GPA of 3.00 (B) or below. Participants were asked for their age at graduation from college. The age range for graduates was 19-62. The majority 168 (40.6%) reported a graduation age of 22 and 105 (25%) reported a graduation age of 21.

Tables 1, 2, and 3 give the statistical data for each of the twelve predictive variables for those in developmental courses (see Table 1), those not in developmental courses (see Table 2), and the total group (groups one and two combined) (see Table 3).

The participants were divided into two groups. Group one (see Table 1) was comprised of those students enrolled in developmental courses their freshman year. There were 86 in group one who responded to each of the twelve predictive variables and responded that they were enrolled in developmental courses their freshman year. The mean for gender was  $M = 1.5$ , ( $SD = .49$ ), which indicated that of the 86 who responded that they were in developmental courses, the breakdown for gender for those enrolled in developmental courses was about equal with half male and half female. For

race  $M = 3.97$ , ( $SD = .50$ ) which meant the majority were White (Caucasian) with minimal diversity. Of the 6 choices given, White was number 4.

The age at enrollment was  $M = 18.40$ , ( $SD = 2.3$ ). The participants would have enrolled as freshmen in 1996, 1997, or 1998. The mean year of enrollment was  $M = 1997.10$ , ( $SD = .84$ ) for those enrolled in developmental courses. The mean year of graduation was  $M = 2001.39$ , ( $SD = 1.31$ ). The age at graduation for those enrolled in developmental courses was  $M = 22.54$ , ( $SD = 2.6$ ). The predictive variable of age at enrollment and age at graduation for students enrolled in developmental courses indicated that those students enrolled in developmental courses who persisted to graduation did not take any longer to graduate than students not enrolled in developmental courses. Those enrolled in developmental courses had a mean high school GPA,  $M = 3.1$ , ( $SD = .49$ ) on a 4.0 scale, which would be a B- letter grade. Table 1 gives the group statistics, means, standard deviations, and populations for the developmental students.

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Table 1  
*Group Statistics (means and standard deviations) for students in developmental courses.*

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Group Statistics		
Group 1 Developmental Courses		
	Mean	Standard Deviation
Gender	1.5930	.49415
Race	3.9767	.50821
Enroll	1997.1047	.84058
Age Enroll	18.4070	2.31810
High School GPA	3.1172	.49118
Withdrawal	1.7442	.43888
Year Graduated	2001.3953	1.31309
Transfer to	1.9186	.27505
Bachelor	1.0349	.18456
Transfer from	1.8953	.30790
Age Graduation	22.5465	2.60613
Persistence	4.30	1.041

---

In group two (see Table 2), there were 291 not enrolled in any developmental courses their freshman year. The mean for gender was  $M = 1.6$ , ( $SD = .472$ ), for race  $M = 3.96$ , ( $SD = .34$ ), which meant the majority were White (Caucasian). The age at enrollment  $M = 18.92$ , ( $SD = 4.4$ ), compared to  $M = 18.40$  for students enrolled in developmental courses. The mean year of enrollment was  $M = 1997.01$ , ( $SD = .85$ ), the mean year of graduation was  $M = 2001.13$ , ( $SD = 1.22$ ). The age at graduation as reported  $M = 23.04$ , ( $SD = 4.4$ ) compared to  $M = 22.5$  for students enrolled in developmental courses. Those not enrolled in developmental courses had a mean high school GPA of  $M = 3.5$ , ( $SD = .43$ ) on a 4.0 scale compared to  $M = 3.1$  for students enrolled in developmental courses. Table 2 gives the group statistics, means, and standard deviations for students not enrolled in developmental courses.

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Table 2

*Group statistics (means and standard deviations) for students not in developmental courses.*

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Group Statistics

Group 2 No Developmental Courses

	Mean	Standard Deviation
Gender	1.6667	.47222
Race	3.9691	.34602
Enroll	1997.0172	.85685
Age Enroll	18.9278	4.43633
High School GPA	3.5134	.43233
Withdrawal	1.7869	.41017
Year Graduated	2001.1375	1.22685
Transfer to	1.8797	.32584
Bachelor	1.0103	.10118
Transfer from	1.8866	.31763
Age Graduation	23.0447	4.80101
Persistence	4.12	.999

---

For the total group (see Table 3), the statistical means and standard deviation were as follows: Gender  $M = 1.6$ , ( $SD = .47$ ) where males were 1 and females were 2. There were more females who responded than males. Race  $M = 3.9$ , ( $SD = .388$ ). The mean age at enrollment for the total was  $M = 18.8$ , ( $SD = 4.05$ ); while the mean age at graduation was  $M = 22.93$ , ( $SD = 4.9$ ) and high school GPA,  $M = 3.4$ , ( $SD = .47$ ). For the group statistics  $n = 377$  as opposed to  $n = 414$ . In the analysis case processing summary there were 37 (8.9%) surveys missing discriminating variable information while 377 (91%) contained all the needed information. Table 3 gives the group statistics, means and standard deviations for both groups.

Table 3

*Group statistics (means and standard deviations) for the total of both groups.*

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Group Statistics

Total for Group 1 Developmental and Group 2 No Developmental Courses

	Means	Standard Deviation
Gender	1.6499	.47765
Race	3.9708	.38826
Enroll	1997.0371	.85284
Age Enroll	18.8090	4.05489
High School GPA	3.4231	.47583
Withdraw	1.7772	.41669
Year Graduated	2001.1963	1.24997
Transfer to	1.8886	.31505
Bachelor	1.0159	.12531
Transfer from	1.8886	.31505
Age Graduated	22.9310	4.39965
Persistence	4.16	1.010

---

### *Measurement Tool*

The measurement tool that was used to collect the data from the alumni participating in the study was a literature-based, author-modified questionnaire, the College Student Persistence Questionnaire (CSPQ). It was an adaptation of the Adult Student Persistence Questionnaire (ASPQ) and the Adult Student Persistence Questionnaire II (ASPQII) (Greenberg, 1997; Heath-Thornton 2002). The CSPQ contained 17 questions. Survey questions 1, 4, and 17 obtained the demographic information of gender and age, which related to research question 5. Survey question 5 measured the grouping variable (dependent variable) for research question 1 about enrollment in developmental courses as a freshman. Survey question 5 asked, “Were you enrolled in developmental courses your freshman year?” The answer is dichotomous “Yes,” or “No.”

Survey questions 6, 7, 8, and 9 addressed research question 1 about enrollment in the developmental courses of reading, math, and writing. These survey questions identified the types of developmental courses the student had been enrolled in and the number of semesters the student was enrolled in developmental courses. These four survey questions were adapted to measure academic integration and courses by identifying the developmental courses taken and the number of semesters the student was enrolled in developmental courses (Cabrera, Nora & Castaneda, 1993; Tinto, 1975).

### Discriminant Analysis

Discriminant analysis was chosen to analyze the research data. Since the outcome variable in this study was dichotomous and the predictors were both dichotomous and

continuous, the use of discriminant analysis was an appropriate method of statistical analysis. Discriminant analysis is useful to predict group membership from a set of variables. The sample was divided into two groups according to the response on the questionnaire. Discriminant analysis examines the predictors and formulates an equation that weighs each one to maximize correct classification of subjects into groups (Cacoullos, 1973; Field, 2003; Grimm & Yarnold, 1998; Nicol & Pexman, 1999). Discriminant analysis is similar to multiple regression except it uses two or more variables to predict membership in one of two groups (Cone & Foster, 1997). In discriminant analysis, a combination of variables are examined to determine if there is a distinction between two groups. The lower the values the greater the distinction between the groups. The stronger the group distinction, the better the predictive ability of the analysis. In this study, discriminant analysis was used to predict membership in developmental courses. The level of significance was set at  $p < .01$ .

The Wilks' Lambda (see Table 4) is the overall model test for the discriminant analysis. The values for the Wilks' Lambda are from zero to unity (Grimm & Yarnold, 1998). The Wilks' Lambda statistical procedure was significant ( $p < .01$ ) in the ability to classify membership in a group. The Wilks' Lambda statistical procedure was significant at the .001 level ( $p < .01$ ) which indicated the Wilks' Lambda was a good predictor for classifying membership in a group.

The Wilks' Lambda tests of equality of group means (see Table 4) are the significance tests to determine if the two groups were significantly different (Grimm & Yarnold, 1998; Nicol & Pexman, 1999). Of the predictive variables analyzed, high school GPA was the only variable that was statistically significant in predicting placement in developmental courses at .001 level ( $p < .01$ ). Table 4 gives the results of

the Wilks' Lambda test of equality of group means for each of the twelve predictive variables.

Table 4

*Wilks' Lambda Tests of Equality of Group Means.*

**Tests of Equality of Group Means**

	Wilks' Lambda	F	df1	df2	Sig.
Gender	.996	1.580	1	375	.209
Race	1.000	.026	1	375	.872
Enroll	.998	.698	1	375	.404
Age Enroll	.997	1.096	1	375	.296
HS GPA	.878	52.310	1	375	.001
Withdraw	.998	.698	1	375	.404
Graduate	.992	2.840	1	375	.093
Transfer to Bachelor	.997	1.011	1	375	.315
Transfer from Bachelor	.993	2.563	1	375	.110
Transfer from Age Grad	1.000	.051	1	375	.821
Transfer from Persistence	.998	.851	1	375	.357
Transfer from Persistence	.994	2.155	1	375	.143

*p* < .01

The classification statistics results show that this statistical procedure is a good predictor of membership in a group. Classification statistics predicted membership in developmental courses correctly at 77.5%. The classification results also demonstrated that the prediction model confirmed the results. Of the 291 participants who responded to all the factors in the questionnaires, the model correctly predicted 275 (94.5%) were not enrolled in developmental courses. Of the 86 participants who reported having been enrolled in developmental courses, the model correctly predicted 69 (80.2%). This pattern indicated a good match between the observed outcomes and those predicted.

## Major Findings

The major findings are presented in relation to the research questions which were used in the study.

### *Research Questions*

The following research questions relating to enrollment in developmental courses- gender, race, year of enrollment, high school GPA, age at enrollment, withdrawal from the institution, the year of graduation, transfer to the institution, attainment of a bachelor's degree, transfer from the institution, and age at graduation- were addressed in this study.

*Research question #1 Is there a significant predictive relationship between persistence to graduation and group membership in a developmental course in college?*

Persistence to graduation and enrollment in developmental courses was not close enough to be statistically significant ( $p > .01$ ). Therefore, there was no statistically significant predictive relationship between freshmen enrolled in one or more developmental courses and persistence to graduation. This would indicate that those who responded and were enrolled in developmental courses did not take significantly longer to graduate than students not enrolled in developmental courses, but those who persisted to graduation graduated at the same rate as students not enrolled in developmental courses ( $p > .01$ ).

*Research question #2. Is there a significant predictive relationship between the gender of freshmen and group membership in a developmental course in college?*

There was no statistically significant predictive relationship between gender and placement in developmental courses ( $p > .01$ ). Of those who responded there were slightly more males enrolled in developmental courses than females, but the difference

was not enough to be statistically significant. Nor was there any indication that males enrolled in developmental courses took any longer to graduate than females enrolled in developmental courses or males not enrolled in developmental courses.

*Research question #3. Is there a significant predictive relationship between the race of freshmen and group membership in a developmental course in college?*

There was no statistically significant predictive relationship in regard to race and enrollment in developmental courses ( $p > .01$ ). There was a relatively small number of minorities represented in this sample. The majority 397 (95.9%) of those who responded were White; 3 (.7%) were African-American; 4 (1%) were Asian; 3 (.7%) reported being Hispanic; 2 (.5%) were Native American and 3 (.7%) reported other. Race was not a factor for placement in developmental courses.

*Research question #4. Is there a significant predictive relationship between the year of enrollment of freshmen and group membership in a developmental course in college?*

All 414 participants had enrolled in college as first-year students. Of those who participated, 133 (32%) enrolled in 1996, 133 (32%) enrolled in 1997, and 146 (35%) enrolled in 1998. For those enrolled in developmental courses, the mean year for enrollment was  $M = 1997.1047$ , ( $SD = .84058$ ). For those who were not enrolled in developmental courses, the mean year of enrollment was  $M = 1997.0172$ , ( $SD = .85685$ ). For the total of both groups, the mean year of enrollment was  $M = 1997.0371$ , ( $SD = .85284$ ). The significance for year of enrollment and placement in developmental courses was ( $p < .01$ ). Therefore, there was no significant difference in the year of enrollment and placement in a developmental course.

*Research question #5. Is there a significant predictive relationship between the age of freshmen and group membership in a developmental course in college?*

The age at enrollment for students enrolled in developmental courses their freshmen year was  $M = 18.4$ , ( $SD = 2.3$ ) and for students not enrolled in developmental courses  $M = 18.9$ , ( $SD = 2.3$ ). Although there was some age difference in students enrolled in developmental courses, 18.4 compared to students not enrolled in developmental courses 18.9, there was no statistically significant predictive relationship between the age of students enrolled in developmental courses and students who were not enrolled in developmental courses ( $p > .01$ ).

*Research Question #6. Is there a significant predictive relationship between high school GPA of freshmen and group membership in a developmental course in college?*

The mean high school GPA for those freshmen enrolled in developmental courses was  $M = 3.1$ , ( $SD = .490$ ), compared to those freshmen not enrolled in developmental courses whose mean GPA was  $M = 3.5$  ( $SD = .43$ ). Therefore, high school GPA was a significant predictor of placement in developmental courses ( $p < .01$ ),  $N = 408$ . Students with a high school GPA of below 3.1 were more likely to be placed in developmental courses.

*Research Question #7. Is there a significant predictive relationship between freshmen who withdrew from the institution and group membership in a developmental course in college?*

Of the 414 respondents, 107 expressed thoughts of withdrawing from their respective institutions. The breakdown was as follows: Bluefield 6; Kentucky Christian University 28; Lees McRae 16; Milligan 31; OVU 11; and Tennessee Wesleyan 15. The survey question that addressed withdrawing was a dichotomous question, “ Did you ever think of withdrawing from \_\_\_\_\_? ‘Yes,’ ‘No.’” This was followed by an open-ended question, “If you answered ‘Yes,’ Why?” The mean for students placed in

developmental courses was  $M = 1.7442$ , ( $SD = .49118$ ). The mean for students not enrolled in developmental courses was  $M = 1.7869$ , ( $SD = .41017$ ). The mean for the total group was  $M = 1.7772$ , ( $SD = .41669$ ). The significance was ( $p > .01$ ); therefore, there was no significant relationship between enrollment in developmental courses and thoughts of withdrawing from the respective institutions.

Of the 107 that considered withdrawing, 80 (75%) did not withdraw and 27 (25%) did withdraw. Of the 27 that withdrew, 8 transferred to another institution. Of the 8 that withdrew and transferred to another institution, 6 returned to their original institution.

*Research Question #8. Is there a significant predictive relationship between the year of graduation and group membership in a developmental course in college?*

The mean year of graduation for students placed in developmental courses was  $M = 2001.3953$ , ( $SD = 1.31309$ ). The mean year of graduation for students not placed in developmental courses was  $M = 2001.1375$ , ( $SD = 1.22686$ ). The mean year of graduation for the total group was  $M = 2001.1963$ , ( $SD = 1.24997$ ). The significance was ( $p > .01$ ). Therefore, there was no significant difference between the length of time it took students who were enrolled in developmental courses and persisted to graduation and the length of time for students not enrolled in developmental courses and persisted to graduate. The graduation of students enrolled in developmental courses was not delayed by their taking developmental courses.

*Research Question #9. Is there a significant predictive relationship between students who transferred to the institution and group membership in a developmental course in college?*

The mean for students who enrolled in developmental courses and transferred to the institution was  $M = 1.9186$ , ( $SD = .27505$ ). The mean for students not enrolled in developmental courses and transferring to the institution was  $M = 1.8797$ , ( $SD = .32584$ ). The mean for both groups was  $M = 1.8886$ , ( $SD = .31505$ ). The significance of transferring to an institution and placement in a developmental course was ( $p > .01$ ). Therefore, transferring to an institution was not a significant predictor of placement in a developmental course.

*Research Question #10. Is there a significant predictive relationship between students who obtained a bachelor's degree and group membership in a developmental course in college?*

The mean for students placed in a developmental course and attainment of a bachelor's degree was  $M = 1.0349$ , ( $SD = .18456$ ). The mean for students not placed in a developmental course and obtaining a bachelor's degree was  $M = 1.0103$ , ( $SD = .10118$ ). The mean for both groups was  $M = 1.0159$ , ( $SD = .12531$ ). The significance for students placed in a developmental course and obtaining a bachelor's degree was ( $p > .01$ ). Therefore, there was no significance between students enrolled in developmental courses and obtaining a bachelor's degree. Placement in a developmental course did not hinder students from obtaining a bachelor's degree.

*Research Question #11. Is there a significant predictive relationship between students who transferred from an institution and group membership in a developmental course in college?*

The mean for students enrolled in a developmental course and transferring from the initial institution was  $M = 1.8953$ , ( $SD = .30790$ ). The mean for students not enrolled in a developmental course and transferring from the initial institution was  $M = 1.88866$ ,

(SD = .31763). The mean for both groups was  $M = 1.8886$ , (SD = .31505). The significance for students transferring from the initial institution was ( $p > .01$ ). Therefore, there was no significant relationship between enrollment in developmental courses and transferring from the initial institution.

*Research Question #12. Is there a significant predictive relationship between the age at graduation and group membership in a developmental course in college?*

The mean at graduation for students placed in developmental courses and age at graduation was  $M = 22.5465$ , (SD = 2.60613). The mean age at graduation for students not placed in developmental courses was  $M = 23.0447$ , (SD = 4.80101). The mean age at graduation for both groups was  $M = 22.9310$ , (SD = 4.39965). The significance for the age at graduation and placement in developmental courses was ( $p > .01$ ). Therefore, the age at graduation for students placed in developmental courses was no more than students not placed in developmental courses. Since the mean age at enrollment of students placed in developmental courses was slightly younger than the mean age of students not placed in developmental courses, the age at graduation of students placed in developmental courses is less than the age at graduation for students not placed in developmental courses.

### Summary

The major findings associated with the research questions can be summarized as follows. Placement in developmental courses was not a significant predictor of persistence to graduation of college freshmen. Specifically, placement in a college reading class was not a significant predictor of persistence to graduation of college freshmen. According to the data analysis, placement in a developmental math class was not a significant predictor of persistence to graduation of college freshmen. Likewise

placement in a developmental writing class was not a significant predictor for persistence to graduation of college freshmen. First-year students who were enrolled in developmental courses did not take longer to graduate than students who were not in developmental courses. Therefore, enrollment in developmental courses did not delay graduation.

According to the data, neither gender, race, age at enrollment, withdrawal from the institution, year of graduation, transfer to the institution, attainment of a bachelor's degree, transfer from the initial institution, or age at graduation were significant predictors of placement in developmental courses for college freshmen.

The discriminant analysis did show, however, a statically significant differences  $p < .01$  in high school GPA and placement in developmental courses. Students with a high school GPA below 3.1 were more likely to be placed in one or more developmental courses their freshmen year, whereas students with a high school GPA of 3.5 were less likely to be placed in a developmental course.

## Chapter 5

### Summaries, Conclusions Implications and Recommendations

This chapter provides summaries, conclusions, implications and recommendations for future research in developmental education and persistence to graduation for underprepared college freshmen. The following sections are included: (a) summary of purpose; (b) summary of procedures; (c) summary of descriptive data; (d) summary of findings (e) conclusions;(f) implications; (g) recommendations; and (h) summary.

#### Summary of Purpose

The purpose of this study was to analyze a series of variables as predictors of enrollment in developmental courses in select institutions. This study attempted to determine if there were variables present at the time of enrollment of first-year college students at six private, church-affiliated, postsecondary institutions that would predict placement in one or more developmental courses their freshman year. This study further attempted to determine if there were any statistically significant differences in the predictive variables of gender, race, year of enrollment, age at enrollment, high school grade point average (GPA), withdrawal from an institution, year of graduation, transfer to an institution, attainment of a bachelor's degree, transfer from the initial institution, and age at graduation for students placed in one or more developmental courses their freshman year and students not placed in developmental courses. The author-modified College Student Persistence Questionnaire (CSPQ) was the measurement tool used to acquire the information needed to perform the data analysis.

#### Summary of Procedures

This was a survey research design (Babbie, 1973; Fowler, 2002; McMillan &

Wergin, 2002). The questionnaire was an author-modified survey that contained 17 questions. The questionnaire included demographic questions along with research-based questions about enrollment in developmental courses and the number of semesters students were enrolled in each developmental course. Two questions pertaining to thoughts of withdrawing and reasons why participants did or did not withdraw were added to the questionnaire. The investigator examined data to determine if there was a statistically significant predictive relationship between students involved in developmental courses and students enrolled in college-level courses as freshmen from six select private postsecondary institutions. Directory information, which included the names and addresses of alumni who enrolled in each of the six selected postsecondary institutions in 1996, 1997 or 1998, was obtained from the institutional records from the six institutions. The statistical procedures utilized included a confirmatory factor analysis, Cronbach's Alpha, classification statistics, bivariate correlations (Pearson's  $r$ ), Wilks' Lambda, and Box's tests of equality of group means. The significance level for all data was  $p < .01$ .

#### Summary of Descriptive Data

The participants in this study were asked to report the following information: if they were enrolled in developmental courses their freshman year; whether they were enrolled in developmental reading, math or writing; how many semesters they were enrolled in developmental courses; gender; race; whether they enrolled in 1996, 1997 or 1998; age at enrollment; high school GPA; if they had ever thought about withdrawing from college; if they had graduated in 2000, 2001, 2002, 2003 or 2004; if they had transferred to the institution; if they had graduated with a bachelor's degree; if they had transferred from their original institution; and age at graduation from college. All 414

participants had enrolled in college as first-year students. Of those who participated in the study, the number that enrolled as first-year students was about equal for each of the three years. Of those who responded, the range of ages reported was from 16-58. The mean age for those enrolled as freshmen in developmental courses was  $M = 18.4$ ; whereas those not enrolled in developmental courses  $M = 18.9$ . All 414 participants responded to the question of gender, with approximately one-third males responding and two-thirds females. Of the respondents, the majority reported race as White or Caucasian. There were 23% who reported having been enrolled in one or more developmental courses their first year as compared to 76% who reported not having been enrolled in any developmental courses their first year. Those who were placed in developmental courses had a statistically significant lower GPA than those who were not placed in developmental courses. Of those who considered withdrawing from college: 25% responded “Yes” and 74% responded “No.” The majority of alumni graduated in 2001 and 2002.

Eleven percent of the respondents, who transferred **to** the respective institution to graduate compared to 88% who had not transferred. There were 91% of the participants who reported having received a bachelor’s degree, while 8% reported they did not complete a bachelor’s degree. In response to the question, “Did you transfer **from** (select institution) to complete your degree?” 13% said “Yes,” and 86% responded “No.” The age at graduation was  $M = 22$  for students in developmental courses and  $M = 23$  for students not in developmental courses.

### Summary of Findings

The research questions were analyzed using the responses to the CSPQ. The questionnaire assessed the respondents’ enrollment in one or more developmental courses

their first year, which developmental course(s) reading, math and/or writing they were enrolled in, and how many semesters they were enrolled in each of the developmental courses.

*Research Question 1. Is there a significant predictive relationship between persistence to graduation and group membership in a developmental course in college?*

Students who took developmental courses graduated within the same time-frame as students who did not take developmental courses. Therefore, enrollment in developmental courses did not delay graduation and led to persistence. Results from this research question show respondents who were enrolled in developmental courses and attained a bachelor's degree completed their degree in four years. Compared to the literature (Astin, 1976; Boylan, 2002; Moore, Jensen & Hatch, 2002; Pascarella & Terenzini, 1991; Student –Right –To –Know Act, 1990), the results of this study indicate that students in private faith-based institutions, regardless of whether they were enrolled in developmental courses are able to attain their degrees in less time than in larger non-faith based institutions. The results of this research question may indicate that students who have had to work hard through high school to earn their grades carry this work habit over to college. Again, as the study indicated, placement in developmental courses did not delay graduation.

*Research Question 2. Is there a significant predictive relationship between the gender of freshmen and group membership in a developmental course in college?*

There was no statistically significant predictive relationship between males and females and placement in developmental courses ( $p > .01$ ). Therefore, there is no indication that gender alone is a predictor of placement in developmental courses. In the history of developmental education from the mid-1600s to the 1950s, White males were

the ones most in need of tutoring and academic help. However, during this time, students in higher education were predominately White males and there were few females enrolled in postsecondary institutions. Since the 1950s, there have been more nontraditional students, both males and females, seeking a higher education. According to the literature (Arendale, 2002; Astin, 1976; Bean & Mentzer, 1985), the enrollment of nontraditional students in higher education has created a need for developmental courses for students who have been out of school for several years, regardless of gender. With the influx of nontraditional students, both males and females, there is a need for developmental courses to prepare them academically for college-level coursework. The result of this research question is that gender is not a predictor of placement in developmental courses. While history indicated that mostly White males were in need of academic help to meet the standards of college-level courses, it was not because they were males that they were unprepared. There were more males represented in remedial academic programs because higher education was dominated by males rather than having an equal enrollment of males and females. This study confirmed earlier studies that gender alone is not a predictor of placement in developmental courses.

*Research Question 3. Is there a significant predictive relationship between the race of freshmen and group membership in a developmental course in college?*

There was no statistically significant predictive relationship in regard to race and enrollment in developmental courses ( $p > .01$ ). There was a minimal number of minority students represented in this sample. The majority 397 or 95.9% of those who responded, were White. Because this study concentrated on institutions in the Appalachian area, the number of racially diverse respondents was not enough to represent other racial groups. The results of this study indicate that White students in Appalachia are placed in

developmental courses because of academic needs and to prepare them for college-level coursework. Although these findings are consistent with the early history of developmental education from the mid 1600s to 1950, when White males were the predominant group in need of help academically, the findings of this study contradict more current studies (Moore, Jensen & Hatch 2002) that focused on the need for developmental education for minority groups such as Latinos and African-Americans. This study verified research studies that indicated there continues to be a need for developmental education not only for minority students, but also for White students.

*Research Question 4. Is there a significant predictive relationship between the year of enrollment of freshmen and group membership in a developmental course in college?*

The significance for year of enrollment and placement in developmental courses was ( $p > .01$ ). Therefore, there was no significant difference in the year of enrollment and placement in a developmental course. There has not been research to indicate there were any increases in enrollment in developmental courses in any specific year. The years examined in this study were 1996, 1997, and 1998. Therefore, the mean year would be the middle year of the three years studied. Perhaps if this study had been conducted in the years following WWII, the year of enrollment might have determined a higher rate of enrollment in developmental courses for nontraditional students. However, in the mid-1900s, there was no influx of students whether nontraditional, international or disabled in developmental courses. Although there was an influx of nontraditional, students, both males and females, after WWII, and although postsecondary institutions have accommodated more students with disabilities since the 1960s, the year of enrollment in the 1990s is not a factor for placement in developmental courses.

*Research Question 5. Is there a significant predictive relationship between the age of freshmen and group membership in a developmental course in college?*

There was no statistically significant predictive relationship between the age of students enrolled in developmental courses and students who were not enrolled in developmental courses ( $p > .01$ ). The results of this study indicate that younger students are placed in developmental courses. However, the age difference is so slight that it is not significant. If the age at graduation is taken into consideration, there is a difference between the age of those who were in developmental courses and graduated (22 yrs.) and those who graduated but were not in developmental courses (23 yrs.). This indicates that those who were enrolled in developmental courses at a younger age and persisted to degree completion also graduated with a degree at a younger age. In the six select institutions involved in the study, being younger and enrolled in developmental courses was not a disadvantage. This is inconsistent with earlier studies (Heath-Thornton, 2002; MacLellan, 2001; Pascarella & Terenzini, 1991; Tinto, 1987), which indicated the age of nontraditional students (25 and older) would be a predictor of placement in developmental courses. There was no literature found that supports the findings that age is a predictor of placement in developmental courses when the students are younger than the traditional age of 18 as opposed to being an older, nontraditional student.

*Research Question 6. Is there a significant predictive relationship between the high school GPA of freshmen and group membership in a developmental course in college?*

High school GPA for those freshmen enrolled in developmental courses was Mean = 3.1, compared to those freshmen not enrolled in developmental courses whose mean GPA was  $M = 3.5$ . High school GPA was a significant predictor of placement in developmental courses ( $p < .01$ ). Students with a high school GPA of below 3.1 were

more likely to be placed in developmental courses. Although high school GPA was a significant predictor of placement in developmental courses, it was not a predictor of attainment of a bachelor's degree. Many students who had a low GPA in high school and were placed in developmental courses in these six institutions were motivated to complete their degree. Degree completion is an extrinsic motivational factor that led to academic success. Another motivation may be that students who had to work hard in high school for their grades continued that work habit in their college career. The results of high school GPA was consistent with other research on persistence, (Astin, 1976; Boylan, 2002; Heath-Thornton, 2002; MacLellan, 2001; Pascarella & Terenzini, 1991; Tinto, 1987) but was inconsistent with the findings of this study that high school GPA alone is a predictor of academic success. Therefore, although high school GPA was a predictor of placement in developmental courses, according to the responses to the research question, other factors such as interests, work habits, personality traits, positive attitudes, abilities, and capabilities, and intrinsic motivations such as desire to succeed and or fear of failure contributed to academic success, which is consistent with the literature (Boylan, 2002; Sigelman & Rider, 2006; Vroom, 1981). It is also consistent with the findings of Rouche and Kirk (1974), who found students who were enrolled in developmental courses earned a mean GPA of 2.66 compared to a mean GPA of 1.96 for high-risk students who were not enrolled in any developmental courses their freshman semester. This study confirmed that developmental courses could prepare at-risk students, or students who are academically underprepared, which would lead them to positive academic success and, ultimately, to graduation.

*Research Question 7. Is there a significant predictive relationship between freshmen who withdrew from the institution and group membership in a developmental course in college?*

Of the 414 respondents, 107 expressed thoughts of withdrawing from their respective institutions. The survey question that addressed withdrawing was a dichotomous question, “Did you ever think of withdrawing from \_\_\_\_\_?” ‘Yes,’ ‘No,’” followed by an open-ended question, “If you answered ‘Yes’ Why?” The significance was ( $p > .01$ ); therefore, there was no significant relationship between enrollment in developmental courses and thoughts of withdrawing from the respective institutions. Of the 107 that considered withdrawing, 80 did not withdraw and 27 did withdraw. Of the 27 that withdrew, 8 transferred to another institution. Of those who transferred to another institution, 6 returned to their original institution. The reasons for considering withdrawing were finances, relationships, adjustment, and change of major. There was no relationship between placement in developmental courses and withdrawing. However, the main reasons for not withdrawing and/or for returning to college after having withdrawn was motivation, not wanting to give up on something they had started, wanting to continue their education, wanting to succeed, not wanting to disappoint their parents, and not wanting to fail.

A direct result of this study suggests students are motivated by both intrinsic and extrinsic factors as suggested in literature (Guiffrida, 2006; Sigelman & Rider, 2006). Extrinsic factors include parental pressure to complete a degree and obtaining a diploma. Intrinsic motivational factors include the desire to succeed and/or the fear of failure. This is consistent with Vroom’s Expectancy Theory of motivation (1981) that people will be

motivated by rewards and success. It assumed that people were motivated by many factors including personality, knowledge, talents, interests, experiences, and abilities. According to Vroom's theory individuals can be motivated if there was a positive relationship between their effort and performance and if their performance results in rewards. Since the reward satisfies a need, the desire to have the need satisfied was strong enough to motivate the person to exert the needed effort. The results of this study indicated that developmental students were academically successful because of motivational factors other than grades (Thomas & Vroom, 1971; Vroom & Deci, 1981; Vroom & Jago, 1988; Vroom & Yetton, 1981).

*Research Question 8. Is there a significant predictive relationship between the year of graduation and group membership in a developmental course in college?*

The significance was ( $p > .01$ ); therefore, there was no significant difference between the length of time it took students who were enrolled in developmental courses to graduate and the length of time for students not enrolled in developmental courses to graduate. The mean year of graduation was the middle year of the three graduation years studied. There was no statistical reason that this year was special to graduation of either students in developmental courses or students not in developmental courses. The result of this study indicates that students in developmental courses did not take longer to graduate than students not in developmental courses. If developmental students had taken significantly longer to graduate, the mean year of graduation would have been later. This adds to the body of knowledge relating to students enrolled in developmental courses by comparing the year of graduation to the year of enrollment. There was no delay in graduation of students enrolled in developmental courses. This is inconsistent with earlier studies (Astin, 1976; Boylan, 2002; Moore, Jensen & Hatch, 2002; Pascarella

& Terenzini, 1991; Student –Right –To –Know Act, 1990), which indicated developmental students would take longer to graduate. However, there were no prior studies in the literature reviewed that supports any particular year of graduation as an indication of placement in developmental courses.

*Research Question 9. Is there a significant predictive relationship between students who transferred to the institution and group membership in a developmental course in college?*

The significance of transferring to an institution and placement in a developmental course was ( $p > .01$ ). The mean and standard deviation are not statistically significant. Therefore, transferring into the institution was not a significant predictor of placement in a developmental course. Students who transferred from other institutions to one of the six institutions in the study were not required to take developmental courses. This may indicate that either these students were in developmental courses previously at another institution and transferred to one of the six institutions or they were not enrolled in any developmental courses in either of the institutions. Regardless, transferring to an institution was not a predictor of placement in developmental courses. Since the researcher found no studies in the literature that indicated transferring to an institution was a predictor of placement in developmental courses, the results of this study were significant.

*Research Question 10. Is there a significant predictive relationship between students who obtained a bachelor's degree and group membership in a developmental course in college?*

The significance for student placement in a developmental course and obtaining a bachelor's degree was ( $p > .01$ ). Therefore, there was no significance between students

enrolled in developmental courses and obtaining a bachelor's degree. Although this is not statistically significant, it is important to note that students who enrolled in developmental courses and persisted to degree completion received the academic help needed to attain a bachelor's degree. Placement in a developmental course did not hinder students from obtaining a bachelor's degree within the four-year time period specified in the study. It is consistent with research studies (Astin, 1976; Moore, Jensen & Hatch, 2002) that indicated students in small, private, four-year institutions have a lower attrition rate than students in larger institutions. It is also consistent with the literature (NADE, 1998) that developmental students in private, four-year institutions persist to attaining a bachelor's degree as opposed to developmental students in community colleges. This study indicated that students in developmental courses in private four-year, institutions are more likely to experience academic success by persisting and obtaining a bachelor's degree.

*Research Question 11. Is there a significant predictive relationship between students who transferred **from** an institution and group membership in a developmental course in college?*

There was no significant relationship ( $p > .01$ ) between enrollment in developmental courses and transferring from the initial institution. A direct result of this study indicates that having been enrolled in one or more developmental courses did not contribute to students' decisions to withdraw from any of the six institutions in the study. Whether a student was enrolled in a developmental course made no difference in a student choosing to withdraw from the initial institution. The results indicated that of those who did withdraw, many came back to the initial institution. This may suggest a proper "fit" between the students and these six private institutions. There was no

literature to support the assumption that placement in developmental courses led to transferring from an institution.

*Research Question 12. Is there a significant predictive relationship between the age at graduation and group membership in a developmental course in college?*

The significance for the age at graduation and placement in developmental courses was ( $p > .01$ ). Therefore, the age at graduation for students placed in developmental courses was no more than students not placed in developmental courses. Since the mean age at enrollment of students placed in developmental courses was slightly younger than the mean age of students not placed in developmental courses, the age at graduation of students placed in developmental courses was less than the age at graduation for students not placed in developmental courses. Those who enrolled at a younger age graduated at a younger age. The direct result of this study indicates that although students enrolled in developmental courses were younger than students not enrolled in developmental courses, being in developmental courses did not delay graduation. Students who were enrolled in developmental courses were younger at graduation than students not enrolled in developmental courses. Having been enrolled in developmental courses may have given these students the added help to succeed academically. This is consistent with earlier studies (Rouche and Kirk, 1974) that indicate underprepared students placed in developmental courses have a higher GPA in college than underprepared students who were enrolled in college-level coursework and were not enrolled in developmental courses.

### Conclusions

The high school GPA of college freshmen enrolled in developmental courses was statistically significant in predicting placement in developmental courses. The fact that

emerged from this research study was, that although the high school GPA of freshmen placed in developmental courses was statistically significant, it was not that much lower than the high school GPA of students not placed in developmental courses. Both freshmen placed in developmental courses and those not placed in developmental courses had a B average.

Another conclusion is that students enrolled in developmental courses who graduated did not take longer to graduate than students not enrolled in developmental courses. Students who were enrolled in developmental courses in the six institutions studied were only in developmental courses one semester, and not more than two semesters. Also whether they were taking one, two or three developmental courses, they were also enrolled in one or more college-level courses. This would explain why the length of time it took them to graduate was not longer than students in college-level courses. Students in developmental courses were not more than one semester behind students who were in college-level courses. Therefore placement in developmental courses did not delay graduation.

### Implications

As a result of this research study there are three implications that are noteworthy. First, it was found that the mean high school GPA for freshmen enrolled in developmental courses was  $M=3.1$  as opposed to a high school GPA  $M=3.5$  for students not enrolled in developmental courses. Although the difference was statistically significant, it was not as big a difference as would be expected. Since the difference was not as much as would be expected, it might be good to recommend that freshmen whose high school GPA is 3.0 be placed in developmental courses their first semester before taking a full-load of college-level courses.

Second, developmental programs benefit both the student and the institution. In this research study freshmen, who were placed in developmental courses and persisted to graduation, not only benefited by being academically successful and obtaining a bachelor's degree but the institutions also benefited by having students better prepared to handle college-level courses. Students who are better prepared for college-level coursework are less likely to drop out and are more likely to persist.

Third, institutions benefit financially. Institutions that allocate money for developmental programs benefit financially when freshmen placed in developmental courses are retained to graduation. Institutions gain more from tuition over a four to five year period than is spent on one semester or one year of developmental education. Therefore, developmental programs benefit institutions both financially and with retention. It is important, therefore, that developmental programs, which not only seek to aid the underprepared student academically but also to integrate all first-year students and aid them in adjusting to college-level coursework, be funded and implemented. This research has demonstrated that identifying at-risk students and counseling them during their freshman year could significantly reduce attrition and could financially benefit private, church-affiliated institutions.

### Recommendations

An analysis of the findings of this study have formed the basis for the following recommendations.

1. Due to the limited population of this study, the results only generalize to other small (under 1,000 full-time equivalent), private, church-affiliated institutions. Generalizability could be improved by enlarging the population to include other small, private, faith-based institutions.

The data from each institution could be analyzed separately by using a within and between statistical procedure. In future studies, each institution could be analyzed to determine which institutions might have the strongest developmental programs and best persistence rate.

2. Future research could contain a qualitative component by interviewing alumni who had been enrolled in developmental courses as freshmen. This would facilitate personal reflection about developmental services offered by institutions and the role these programs play in academic success.
3. A longitudinal study could be conducted for the six participating institutions to determine how they respond to the needs of at-risk first-year students and what, if any, administrative actions are taken to assure students optimum academic success.
4. Further research could compare the six church-affiliated institutions to similar non church-affiliated institution to analyze the persistence rate of developmental students between faith-based and non-faith-based institutions.

### Summary

This chapter contains the summaries of purpose, procedures, descriptive data, and findings. It also contains conclusions, and implications for small, private, church-affiliated institutions and recommendations for further studies. There are many differences, including faculty to student ratio, environment, student population, and governance, between large public and private postsecondary institutions and smaller church-affiliated institutions. What might apply to larger institutions may not apply to

smaller private institutions. Therefore, not all research that is conducted in larger public or private institutions can be generalized to smaller, private, church-affiliated institutions. Because most research has been done at large postsecondary institutions, there was a need to conduct research at smaller institutions to determine what, if any, information obtained from studies at larger institutions would apply to smaller private institutions.

The problem that prompted this research study was attrition of college freshmen due, in part, to the lack of academic preparedness upon enrolling in college. It was discovered during the literature review portion of this study there was a lack of research in small, private, postsecondary institutions. There was also a lack of research in the field of developmental education in small, four-year, private, church-affiliated institutions.

The conclusion of the study was that of the variables analyzed in the six small postsecondary institutions, the only pre-college factor that was statically significant in predicting placement in developmental courses was high school GPA. Another finding of this study was that alumni who responded to the questionnaire and who had been enrolled in developmental courses in the six postsecondary institutions studied did not take longer to graduate than students not enrolled in developmental courses. The results of this study indicated that since students with low high school GPAs persisted to graduation within the same time frame as students with high GPAs there are both intrinsic and extrinsic motivations that influence students to succeed academically. It became evident that grades alone are not a predictor of academic success.

The implication for the participating institutions was that institutional leaders need to be made aware of the pre-college predictors that determine the student's need for enrollment in developmental courses. They also need to know the effect enrollment in a developmental course has on student persistence and the financial benefits that can be

gained for the institution. Factors that lead to student persistence are important for retention purposes. Recommendations for further research on developmental courses among the six postsecondary institutions studies and research comparing church-affiliated institutions with non-church-affiliated institutions were suggested.

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## APPENDICES

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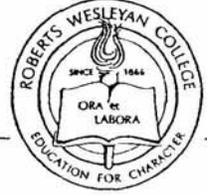
Appendix A  
*College Student Persistence Questionnaire*

### College Student Persistence Questionnaire

Please complete the following questionnaire. Your participation is greatly appreciated. Return the completed questionnaire within 2 weeks in the self-addressed stamped envelope provided. Thank you for your cooperation. Mary Ann Thorn

1. Gender:  Male  Female
  2. Race:  African American  Asian  Hispanic  White  
 Native American  Other (please specify). \_\_\_\_\_
  3. What was your approximate high school grade point average (GPA) at graduation?  
\_\_\_\_\_
  4. What year did you enroll at Tennessee Wesleyan College (TWC)?  
 1996  1997  1998  Other (please specify). \_\_\_\_\_
  5. How old were you when you enrolled as a freshman? \_\_\_\_\_
  6. Were you enrolled in developmental courses your freshman year?  Yes  No  
If you checked No skip to question # 11.
  7. If you checked Yes, which courses were you enrolled in? (**Check all that apply**).  
 Reading  Writing  Math  Other (please specify). \_\_\_\_\_
  8. How many semesters were you enrolled in **Reading**?  
 1  2  3  4  Other (please specify). \_\_\_\_\_
  9. How many semesters were you enrolled in a developmental **Writing** course?  
 1  2  3  4  Other (please specify). \_\_\_\_\_
  10. How many semesters were you enrolled in a developmental **Math** course?  
 1  2  3  4  Other (please specify). \_\_\_\_\_
  11. During the period that you were attending TWC, was there ever a time that you seriously considered withdrawing from college?  Yes  No
  12. If **yes**, please answer the following:
    - a. Briefly discuss why you were thinking of withdrawing.  
\_\_\_\_\_  
\_\_\_\_\_
    - b. For what reason(s) did you decide not to withdraw?  
\_\_\_\_\_  
\_\_\_\_\_
  13. What year did you graduate from college?  2000  2001  2002  2003  
 2004  Other (please specify). \_\_\_\_\_
  14. Did you transfer **to** TWC from another college or university?  Yes  No
  15. Did you graduate with a bachelor's degree?  Yes  No
  16. Did you transfer **from** TWC to another college or university to complete your degree?  
 Yes  No
  17. How old were you when you graduated from college? \_\_\_\_\_
- Thank you for your cooperation, help, and participation.*

Appendix B  
*Letter of Permission to Modify ASPQII*



January 13, 2004

Mary Ann Thorn  
Assistant Professor of Humanities  
Ohio Valley College  
1 Campus View Drive  
Vienna, WV 26105

Dear Professor Thorn:

I apologize for the delay in responding to your letter of December 16, 2003. As I mentioned to you on the telephone, you have my permission to employ or modify the Adult Student Persistence Questionnaire II (ASPQII) for your dissertation study.

Best of luck in this important study and I look forward to reading the results. Feel free to email me at [heathd@roberts.edu](mailto:heathd@roberts.edu) if I can be of further assistance.

Sincerely,

Debra A. Heath-Thornton, Ed.D.  
Associate Professor of Criminal Justice and Sociology  
Director, Criminal Justice and Sociology Programs

Appendix C  
*Cover Letter to Participants*

Graduate College  
School of Education & Professional Development  
Office of Doctoral Programs

May 31, 2005

Dear Tennessee Wesleyan College Alumnus:

Please accept this invitation to participate in an important study. The purpose of this research study is to analyze the factors that affect student persistence to graduation in private, liberal arts, church-affiliated colleges. I am currently advising a doctoral student at Marshall University, Mary Ann Thorn, and we will use these data to complete her dissertation. This research study has been approved by the Marshall University's Institutional Review Board.

Your participation is vital to the success of this project and is entirely voluntary. If you do not wish to participate, simply discard the questionnaire. You have a right not to respond to every question. You have the right to withdraw from this study at any time without penalty. All individual responses will be kept anonymous and confidential to the extent the law and institutional policy allows. Completing and returning the questionnaire constitutes your consent to participate. It should take only 5 minutes to complete the survey. Your directory information will be destroyed when the project is completed.

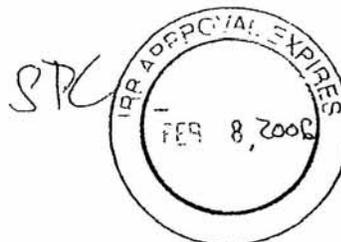
Please only complete this survey if you are at least 18 years old at this time. Approximately 1800 graduates from six colleges will be asked to participate in this study. Please complete the survey and place it in the self-addressed stamped envelope provided.

Keep this letter for your records. Tennessee Wesleyan was contacted for information to mail the surveys to all the alumni who enrolled in 1996, 1997 or 1998. Feel free to contact me directly if you have any questions or concerns about the risks or benefits associated with your responses at (304)746-8989 or [dprisk@marshall.edu](mailto:dprisk@marshall.edu) or you may contact Mary Ann Thorn at (304)865-6126 or [mathorn@ovc.edu](mailto:mathorn@ovc.edu).

If you have any questions regarding your rights as a participant in this research study, please contact Dr. Stephen Cooper, Chair for Marshall University's IRB#2, at (304) 696-7320.

Thank you again for your cooperation and participation.  
Sincerely,

Dr. Dennis P. Prisk  
Marshall University  
100 Angus E. Peyton Drive  
South Charleston, WV 25303-1600



**IRB**

**FEB 8 2006**

**APPROVED**

Appendix D  
*Curriculum Vitae*

Mary Ann Thorn  
CURRICULUM VITAE

**CAREER SUMMARY**

Demonstrated accomplishments in public school teaching, postsecondary school teaching, public speaking, organizational and counseling skills.

**EDUCATION**

**B.A., Ohio Valley College, Vienna, West Virginia**

Major: Bible. Emphasis: Christian Counseling

**GRADUATE STUDIES**

**M.A., Marshall University Graduate College**

Major: Psychology. Emphasis: Clinical Diagnostic Counseling

**Ed.D., Marshall University** Completed course work, major comprehension examination and candidate for doctorate in Leadership Studies Higher Education Administration

**PROFESSIONAL EXPERIENCE**

**Director of Academic Support Services**

**Director of Institutional Research**

*Ohio Valley University, Vienna West Virginia*

**Adjunct Professor**

Adjunct professor with Ohio Valley College since 1996.

Taught various courses at Ohio Valley College including: Developmental Reading, Concepts of College Writing, English Composition, English Proficiency, Basic Speech, General Psychology, Human Growth and Development, and Test and Measurement.

*Marshall University Graduate College, South Charleston, West Virginia*

Taught Clinical Diagnostic Practice, fall 1999

**Substitute Teacher**

*Warren Local School District, Vincent, Ohio*

Completed 18 years of substitute teaching for the Warren Local School District for grades kindergarten through twelfth grade covering a variety of subjects. 1970-1976, substituted in the Altoona Area School District, Altoona, Pennsylvania, for grades kindergarten through twelfth grade in a variety of subjects.

**Home-bound Teaching**

Provided home-bound teaching for students, kindergarten through twelfth grade, with various physical, emotional problems including terminally ill students and students who were suicidal.

**Home Tutoring**

Provided home tutoring for elementary age students.

**Administered Psychological Testing**

Administered testing for students entering kindergarten in the Warren Local