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GED diploma graduates: Performance, persistence, and attrition in four -year postsecondary education institutions

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**GED DIPLOMA GRADUATES: PERFORMANCE, PERSISTENCE, AND ATTRITION
IN FOUR-YEAR POSTSECONDARY EDUCATION INSTITUTIONS**

A Dissertation

Presented to

The Faculty of the School of Education

The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

by

Monica A. Osei

September 2001

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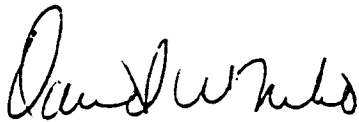
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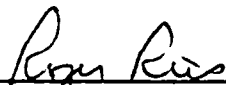
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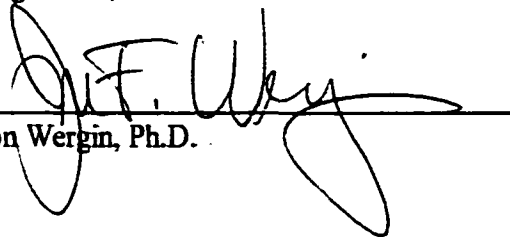
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Dedication

For your support, encouragement, patience, teachings, and above all,

the love and time you have invested in me

I dedicate this dissertation to my friend and mother, Margaret

Most important,

Thank you GOD

For your guidance, grace, strength

And Agape Love

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First and foremost, I want to express my sincere appreciation for the love and support given to me by my husband. When I could not see, you gave me light. When I was challenged, you gave me encouragement. You gave inspiration and comfort. Thank you with much love and respect.

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To Ronnie and Annie, thank you from the bottom of my heart for your love, prayers, encouragement, and faith. To Minta Afari and Asare, thank you for paving the way for me. To my heavenly father, I give thanks for this entire endeavor.

ABSTRACT

GED DIPLOMA GRADUATES: PERFORMANCE, PERSISTENCE, AND ATTRITION IN FOUR-YEAR POSTSECONDARY EDUCATION INSTITUTIONS

Individuals who pass the General Educational Development (GED) exam often pursue higher education. Although GED diploma students tend to enroll in two-year colleges, an increasing number are enrolling in four-year postsecondary education institutions. GED diploma college students are characterized as nontraditional students and usually possess risk factors that impede academic performance and cause attrition. Collective data and analysis of their academic performance and persistence and attrition behavior is needed to determine their success in attaining a bachelor's degree.

The purpose of this study was to analyze the academic performance and persistence and attrition behavior of GED diploma undergraduates who applied directly to Virginia's public, four-year postsecondary education institutions fall 1993 and fall 1994. Data on demographic factors, first-year grade point average, and persistence and attrition behavior for Virginia GED undergraduates and a national sample of nontraditional undergraduates were analyzed and comparisons were conducted within the groups and between the groups.

Statistical tests were used to determine if relationships existed between gender and academic performance and gender and graduation. Multiple regression was utilized to determine if relationship existed between demographic variables and GPA. Discriminant analysis was used

to classify first-year dropouts and six-year graduates.

Comparatively, GED diploma undergraduates do not perform as well as other nontraditional undergraduates. GED diploma undergraduates who complete more credit hours in their first-year can earn satisfactory grades and are likely to persist to a second year. Female GED undergraduates should be expected to earn higher GPAs than their male counterparts. Older GED undergraduates are more likely to achieve higher GPAs and accumulate more credit hours than younger GED undergraduates. The majority of GED undergraduates who enroll directly in four-year degree programs drop out in their first year and over time and subsequently, do not earn a bachelor's degree.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iv
ABSTRACT	v
LIST OF TABLES	xi
CHAPTER	
I. INTRODUCTION	1
A. Statement of the Problem	3
B. Purpose of the Study	5
C. Research Questions	5
D. Sample	7
E. Methodology	7
F. Significance of Study	9
G. Limitations	10
H. Definition of Terms	10
II. REVIEW OF RELATED LITERATURE AND RESEARCH	
A. Introduction	12
B. Overview of Attrition Research and Models	14
1. Demographic Variables	16
2. Academic Variables	18
3. Environmental Variables	19
C. Major Attrition Models	20
D. History of GED	22
1. Sub-test themes	25
2. Examination Statistics	27
E. Nontraditional Students in Higher Education	28

Table of Contents (continued)		Page
F.	GED Students	32
1.	A Profile of GED Students	32
2.	A Census of Virginia's GED Students	34
3.	A profile of GED graduates in higher education	36
G.	GED Student Performance in Postsecondary Education Settings	38
1.	Two-year Community Colleges	39
2.	Four-year Postsecondary Education Settings	44
H.	Summary	50
III. METHODOLOGY		
A.	Introduction	52
B.	Research Questions	52
C.	Sample	55
D.	Research Design	56
E.	Procedures	60
F.	Data Analysis	62
G.	Limitations	64
IV. REPORT OF DATA AND DATA ANALYSIS		
A.	Introduction	65
B.	Findings/Results	66
1.	Analysis of Demographic Data	66
2.	Comparisons by Gender	85
3.	Analysis of Demographic Factors and Student Performance	96
C.	Summary	101

Table of Contents (continued)

Page

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. Summary	104
B. Conclusions and Discussion of Major Findings	105
C. Implications for Practice	115
D. Recommendations for Future Research	119
E. Conclusion	120

REFERENCES	121
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LIST OF TABLES

Table	Page
1. Demographic Profile of First-time Enrolled GED Diploma Undergraduates in Virginia's Public, Four-year Postsecondary Institutions	67
2. Demographic Profile of First-time Enrolled Nontraditional Undergraduates Nationally in Public, Four-year Postsecondary Institutions	68
3. Average First-year Cumulative Hours and GPA for Virginia GED Undergraduates	73
4. Average First-year GPA for Virginia GED Undergraduates Earning Three or More Credit Hours	74
5. Average First-year GPA for Nontraditional Undergraduates Earning Three or More Credit Hours – Nationally	76
6. First-year Attrition Rate for Virginia GED Undergraduates	79
7. First-year Attrition and Persistence Rates of Nontraditional Undergraduates – Nationally	80
8. Six-year Graduation and Attrition Rates for Virginia GED Undergraduates	81
9. Five-year Graduation and Attrition Rates for Nontraditional Undergraduates – Nationally	82
10. First-year GPA of Virginia Male and Female GED Undergraduates	86
11. Results of T-test Analysis of GPA for Virginia GED Male and Female Undergraduates	87
12. First-year GPA of Nontraditional Male and Female Undergraduates – Nationally	88
13. First-year Cumulative Hours of Virginia GED Male and Female Undergraduates	90

14.	Results of T-test of First-year Cumulative Hours for Virginia GED Male and Female Undergraduates	91
15.	Result of Chi Square Analysis of Virginia GED Male and Female Undergraduates	92
16.	Six-year Graduation and Attrition Rates for Virginia GED Male and Female Undergraduates	93
17.	Five-year Graduation and Attrition Rates of Nontraditional Male and Female Undergraduates – Nationally	94
18.	Multiple Regression of Demographic Factors on First-year GPA of Virginia GED Undergraduates	96
19.	Demographic Variables as Predictors of First-year Attrition for Virginia GED Undergraduates	99
20.	Demographic Variables as Predictors of Six-year Graduation for Virginia GED Undergraduates	100

CHAPTER I
INTRODUCTION
General Introduction

Student attrition from institutions of higher education has long been perceived as an important topic. As early as the 1970s, Pantages and Creedon (1978) noted undergraduate student attrition as a problem deserving attention. In 1971, there were 7.6 million undergraduates enrolled in higher education. It was estimated that roughly 2.3 million undergraduates would never receive a bachelor's degree. Moreover, for every 10 students who entered college, only four would graduate four years later and only three of the remaining six would eventually earn a college degree. On average, 30% of undergraduates would not receive a bachelor's degree. Since the 1970s, the attrition rate for undergraduates has steadily increased. By the late 1980s, the five-year attrition rate for public, four-year institutions was approximately 47% (Gill, 1993) and by the late 1990s, approximately 50% of undergraduates did not attain a bachelor's degree (Donohue & Wong, 1997).

Student attrition is also a phenomenon that affects a variety of constituencies. When students dropout, that is leave without ever returning, institutions are often held accountable by external and internal constituencies and sometimes, by students themselves. Colleges and universities, specifically four-year institutions, suffer important consequences when students leave prior to graduation. There are several repercussions of student attrition such as: loss of tuition and fees, decrease in number of students enrolled, increased recruiting costs, lower graduation rates, and loss of public and government confidence (Gill, 1993; Hunter, 1992). Student affairs representatives and administrators suffer from a loss of credibility as their ability to meet

institutional goals and commitments is questioned. Students also suffer significant losses including financial resources already invested, future career limitations, and in some cases, negative psychological consequences such as anger, frustration, depression, and low self-esteem (Darkenwald, 1981; Gill, 1993). Consequently, the losses are significant and expensive when students fail to complete their educational goals.

Colleges and universities are concerned about students who voluntarily withdraw from their studies before receiving their degrees (Hunter, 1992). Researchers have analyzed rates, factors, and causes for premature departure by college students. Attrition research, however, has primarily focused on traditional college students, that is those students who graduate with a traditional high school diploma and immediately enroll in postsecondary institutions. Theoretical models developed by Spady (1970) and built upon by Tinto (1975) have been used to examine factors and explain the causes for attrition by traditional college students.

Tinto's model has also been used to analyze attrition behavior of nontraditional college students, that is those students who differ from traditional college students (Pascarella & Chapman, 1983). However, it became apparent by the mid 1980s that because of obvious differences, theoretical models of attrition used for traditional college students should not be used with nontraditional college students. Utilizing variables from different models, Bean and Metzner (1985) designed The Conceptual Model of Nontraditional Undergraduate Student Attrition. Bean and Metzner's model was thought to be better suited to explain attrition for nontraditional students, because it did not rely on the concepts of "socialization or similar social processes" emphasized in Tinto's model (Bean and Metzner, 1985, p. 489). Instead, the Nontraditional Student model included variables which were more characteristic of nontraditional college

students, that is variables which emphasized “greater interaction with the noncollegiate, external environment” (p. 490).

Since the 1980s, the increasing number of nontraditional students in postsecondary institutions has prompted questions concerning their motivations, needs, and attrition behavior. Comprising over 65% of part-time student enrollment and over 10% of full-time enrollment in four-year institutions (Chronicle of Higher Education, 2000), nontraditional undergraduates demonstrate a desire to earn degrees by flocking to college campuses. Whether they are nontraditional by age, personal commitments, or high school diploma status, nontraditional students demonstrate higher achievement and motivation than traditional students (Donohue & Wong, 1997). Since this is the current reality, four-year postsecondary institutions should be interested in the academic performance and persistence and attrition rates of what may be their most highly motivated students.

Statement of the Problem

The National Center for Education Statistics defines nontraditional college students as those students who possess at least one of the seven risk factors – delayed enrollment, being financially independent, having children, being a single parent, being a GED recipient, part-time attendance, or working full-time while enrolled in college (Berkner, Cuccaro-Alamin, & McCormick, 1996). Nontraditional students have also been characterized as those students who have been out of school for three or more years, pursue postsecondary education at ages later than traditional 18 year old college students, and have significant family commitments, employment obligations, and financial challenges (Gaines, 1993; Loudermilk, 1995).

Representing a sector of nontraditional students is a group of students who for one reason

or another did not complete a traditional, four-year high school education. These students pursued and obtained the General Educational Development (GED) diploma. For many GED diploma students, the GED was sought not only for a second chance to complete secondary education, but to also begin postsecondary education (Dunbar, 1996). GED diploma students also face additional challenges beyond the nontraditional status. Because they fail to complete their secondary education in the traditional manner, the majority of GED students do not have the experience of four, formal high school years and consequently, they lack academic credentials sought by four-year postsecondary institutions, such as standardized test scores and more important, college preparatory courses taken during high school years. For these reasons, institutional admissions' officers, academic counselors, and even faculty, often question the academic ability of GED diploma students. Further, as is characteristic of most nontraditional students, GED diploma students live with competing obligations and their ability to perform adequately, handle the rigor and pressures of four-year degree programs, and persist to graduation can be problematic.

Most institutions of higher education accept the GED diploma in lieu of a traditional high school diploma (Kroll, 1993; Soltz, 1996). Because of this acceptance, the number of GED test takers who report taking the GED to pursue postsecondary education has increased from 40.8% in 1979 to 65% in 1999 (Boesel, Alsalam, & Smith, 1998; Who Took the GED, 2000). Moreover, the number of GED diploma students attending four-year colleges and universities is also increasing. Many institutions, however, do not collect data on the academic performance, patterns of enrollment, and the persistence and attrition behavior of GED diploma students.

No studies were located on GED diploma students participating in Virginia's public, four-

year postsecondary institutions. As noted previously, student attrition is costly to all constituencies. Hence, it is important to determine whether GED diploma students perform adequately and persist through their first academic year. Advanced education also tends to improve an individual's earning potential as well as career possibilities (Boesel, Alsalam, & Smith, 1998; Brint and Karabel, 1989). As such, it is important to determine how well GED diploma students persist to graduation and at what rate they prematurely leave the institution before graduating.

Purpose of the Study

The intent of this study was to examine and analyze the demographic profile, academic performance, and persistence and attrition behavior of first-time enrolled GED diploma students who applied directly to Virginia's public, four-year colleges or universities fall semester 1993 and fall semester 1994 and to compare them to a national sample of first-time enrolled nontraditional students who applied directly to public, four-year colleges or universities across America, fall 1989. Data gathered on all students included: age, gender, race, residency, receipt of financial aid, enrollment status, first-year GPA and number of accumulated credit hours, and persistence and attrition behavior.

Research Questions

This study was designed to answer the question: How well do GED diploma students who apply directly to Virginia's public, four-year colleges and universities perform in completing credit courses, persist through the first year (fall semester to fall semester), persist in graduating, and compare with a national sample of nontraditional college students? Specific research questions included:

1. What are the descriptive characteristics including: age, gender, race, residency, receipt of financial aid, enrollment status, first-year GPA and number of accumulated credit hours, and persistence and attrition behavior of GED diploma students who applied directly to and enrolled in Virginia's public, four-year colleges or universities fall semester 1993 and fall semester 1994 and nontraditional students who applied directly to and enrolled in public, four-year colleges and universities nationally, fall semester 1989?
2. What differences exist between the first-year GPA and number of credit hours earned for Virginia GED male undergraduates and the first-year GPA and number of credit hours earned for Virginia GED female undergraduates?
3. What differences exist between the number of Virginia GED male and female graduates?
4. What is the relationship between demographic factors and first-year GPA for Virginia GED undergraduates?
5. What is the relationship between demographic factors and first-year attrition for Virginia GED undergraduates?
6. What is the relationship between demographic factors and graduation for Virginia GED undergraduates?
7. How do Virginia GED undergraduates compare in academic performance and persistence and attrition to a national sample of nontraditional undergraduates?

Sample

The subjects for this study were all GED diploma students who applied directly to Virginia's public, four-year colleges or universities fall semester 1993 and fall semester 1994. All subjects must have been admitted to and enrolled in a program of study. GED diploma students enrolled in two- or four- year postsecondary institutions prior to fall 1993 and 1994 were not included.

The subjects for this study were also a national sample of nontraditional undergraduates who were first-time beginners enrolled in public, four-year colleges and universities across America, fall semester 1989.

For this study, only students who initially enrolled in four-year institutions were chosen, because research shows: (1) initial attendance at a two-year rather than a four-year college lowers the likelihood of one's attaining a bachelor's degree (Pascarella and Terenzini, 1991), (2) nontraditional students attending two-year institutions are less likely to persist or attain degrees than those in four-year institutions (Horn and Carroll, 1996), (3) educational attainment, that is, the number of years of schooling completed or degrees attained, has a pivotal influence on one's ultimate occupational and economic status (Boesel, Alsalam, & Smith, 1998), (4) social mobility, as defined by changes in occupational status and income, is inextricably linked to postsecondary education, and (5) attainment of a bachelor's degree is central to the determination of both occupational status and income (Pascarella and Terenzini, 1991).

Methodology

The methodology for this study was designed to characterize Virginia GED undergraduates and a national sample of nontraditional undergraduates and analyze their academic

performance and persistence and attrition behaviors. To determine their comparative success and failure, Virginia GED undergraduates were compared to the national sample of nontraditional undergraduates.

In Phase I, descriptive research was used to report demographic characteristics of GED diploma students who applied directly to Virginia's public, four-year postsecondary institutions. Descriptive research was also used to report demographic characteristics of a national sample of nontraditional undergraduates who applied directly to public, four-year postsecondary education institutions across America. Demographic information included: age, gender, race, residency, receipt of financial aid, and enrollment status. Data were analyzed for first-year academic performance and persistence and attrition behavior. Within group and between-group comparisons were conducted for Virginia GED undergraduates and the national sample of nontraditional undergraduates.

In Phase II, *t* tests for independent sample means were used to determine if a difference existed between Virginia GED male and female undergraduates with respect to their first-year GPAs and with respect to the number of credit hours they earned. A chi square test was also used to determine whether Virginia GED male and female undergraduates differed with respect to graduation status. First-year GPA and graduation rates were analyzed for Virginia GED male and female undergraduates and the national sample of nontraditional male and female undergraduates. Within group comparisons were conducted for both groups. Data for first-year GPA and graduation rates for Virginia GED undergraduates were compared to data for the national sample of nontraditional male and female undergraduates.

In Phase, III, stepwise multiple regression analysis was performed to analyze the relationship of demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) with first-year GPA of Virginia GED undergraduates. Discriminant analysis was employed to determine the demographic variables (age, gender, race, residency, receipt of financial aid, and enrollment status) that best discriminated between Virginia GED undergraduates who left during their first-year and those who persisted to their second year. Discriminant analysis was also used to determine could Virginia GED undergraduates who graduated or those who did not graduate be classified by demographic predictors (age, gender, race, residency, receipt of financial aid, and enrollment status).

Significance of the Study

This type of research provides valuable information about the academic performance, persistence to degree completion, and attrition rate of GED diploma students participating in Virginia's public, four-year colleges and universities. As more GED diploma students seek higher education in four-year colleges and universities, it is important that college and university officials (admissions' officers, adult and continuing education personnel, faculty and administrators, and academic and career counselors) be cognizant of and knowledgeable about the GED diploma undergraduate population. Officials at institutions should seek to ensure that GED diploma students receive appropriate guidance and support that will facilitate their educational pursuits and promote college success.

Members of the adult education profession who teach and counsel GED students prior to their earning their GED will also have information about GED diploma students who have continued their education in public, four-year postsecondary institutions. Findings from this study

are also useful to GED diploma students who are contemplating beginning their postsecondary education at the four-year postsecondary level. Further, the information in this study provides statistical data that can be compared with other studies conducted on GED diploma student academic performance, persistence, and attrition. Finally, the research data can provide evidence of GED diploma students' success and nonsuccess in attending public, four-year postsecondary institutions.

Limitations of the Study

The results of this study are limited to only GED diploma students with no prior postsecondary education participating in public, four-year colleges or universities. Data for Virginia GED diploma students were archival and collected by Virginia's State Council of Higher Education (SCHEV). Due to the Family Educational Rights and Privacy Act of 1974, information obtained cannot be used to identify a particular student nor can attempts be made to contact any students. Data for the national sample of nontraditional undergraduates were archival and only available using DAS software.

Definition of Terms

1. General Educational Development (GED) diploma – a diploma issued for the successful achievement of satisfactory scores on a GED exam
2. GED diploma students – candidates who pass a GED test thereby demonstrating cognitive abilities normally associated with completion of a traditional, four-year high school program of study
3. Attrition – Voluntary withdrawal from an institution prior to earning a degree

4. **Credit Hours Earned** – the total number of hours earned by a student who has satisfactorily completed all required course work
5. **Educational Performance** – the performance of students indicated by the number of credit hours earned, grade point average (GPA), and completion of a program of study
6. **Educational Persistence** – completion of degree requirements which affords a college student a baccalaureate degree
7. **Stopout** – when students leave postsecondary education prior to their 2nd year and reenroll at a later time to either their initial institution or transfer to another postsecondary education institution
8. **Dropout** – when students leave postsecondary education and do not return
9. **Nontraditional** – possession at least one of the seven risk factors – delayed enrollment, being financially independent, having children, being a single parent, being a GED recipient, part-time attendance, or working full-time while enrolled (Berkner, Cuccaro-Alamin, & McCormick, 1996)

Chapter II

REVIEW OF RESEARCH AND RELATED LITERATURE

Introduction

Research conducted dating back to 1950 has sought to define and explain the phenomenon of undergraduate student attrition (Pantages & Creedon, 1978). Questions such as why students stop out or dropout, or why students transfer prior to completing their educational endeavors have been repeatedly posed. Further, most research on student attrition has historically been conducted on traditional college students, that is those students who are between 18 and 21 years of age, financially dependent on parents, and have graduated with a traditional, four-year high school diploma. Prior to the 1970s, these students represented the majority of students attending four-year postsecondary institutions. From the 1940s and through the early 1970s, however, policy changes at the state and federal level of government opened the doors of higher education institutions to large numbers of nontraditional students: women, people of color, people with disabilities, people from low socioeconomic conditions, and nontraditional high school graduates. College attendance was encouraged for all Americans resulting in more diversity on college campuses. By the 1980s, record numbers of nontraditional students attended institutions of higher education (Bean and Metzner, 1985; Villella & Hu, 1991).

Nontraditional students are described as those students who are different from traditional college students. They are also characterized as having risk factors that can impact whether they earn college degrees or prematurely withdraw. One of the risk factors characterizing nontraditional students is possession of a nontraditional high school diploma, that is a General Educational Development (GED) diploma. The General Educational Development (GED)

diploma serves the needs of many students who drop out of high school, or for other reasons, do not graduate with a traditional four-year high school diploma. Whether to pursue educational, vocational, or personal goals, many adults find it necessary to utilize the GED to complete their secondary education. Since its inception in 1942, more than 20 million individuals have taken the GED test and since 1949, an estimated 13 million adults have received GED diplomas (“Higher Passing Standard,” 1998).

For over a decade, an increasing number of individuals who pass the GED exam have pursued postsecondary education (Baldwin, 1991; Boesel, 1998; Marrapese, 1989; Mollison, 2000; Soltz, 1996). For most, seeking postsecondary education is a part of completing their educational goals. Although many GED diploma graduates matriculate to two-year community colleges to complete their educational goals (McElroy, 1990; Strosnider, 1997), some only use the community college as a foundation and transfer to four-year postsecondary institutions, (Manning, 1992) while others apply directly to four-year institutions (Strosnider, 1997).

Since the 1980s, administrators, counselors, and instructors have posed questions concerning how well GED diploma students will perform in higher education and how likely success is for them in academically rigorous postsecondary environments (McElroy, 1990). These questions arise primarily because GED diploma students do not complete traditional high school and subsequently, do not receive the academic foundation often gained by high school students. Although several studies have been conducted to measure the performance, persistence, and attrition of GED diploma graduates at two-year institutions (Hamilton, 1998; Klein & Grise, 1988; Soltz, 1996), only a few isolated studies have been conducted at four-year institutions (Colert, 1984; Owens, 1989; Quinn, 1986).

In this chapter, the first section presents an overview of attrition research and the major attrition models in postsecondary education. The history of the GED exam is presented followed by a profile of nontraditional students, GED students, and GED diploma graduates in higher education. The concluding section presents analysis of studies on the academic performance and persistence and attrition rates of GED diploma graduates in two-year community colleges and GED diploma graduates in four-year colleges and universities.

Overview of Adult Attrition Research

For decades, because of its costliness to institutions, students' early withdrawal from college resulting in dropout has been perceived as a problem. Researchers have sought not only to define attrition, but to learn what factors contribute to students prematurely leaving institutions of higher education. Although researchers and educators have traditionally focused their attention on attrition of traditional college students (Pantages & Creedon, 1978; Terenzini & Pascarella, 1991), the growing number of nontraditional students in higher education has prompted examination of attrition among nontraditional college students. However, research on nontraditional student attrition is still notably absent in the literature (Bean & Metzner, 1985; Terenzini & Pascarella, 1991) and thus, serves as impetus for additional research.

As early as the beginning of the 20th century, adults' premature withdrawal from college prior to completion was noted as a problem (Verner & Davis, 1964). Adults not only exhibited different patterns of attendance and reasons for attending, they tended to withdraw at higher rates than traditional college students (Astin, 1975; Fetters, 1977; Saintly, 1971). Reasons why adults withdrew varied from conflict with personal life and inadequate academic integration to successful achievement of their educational goals (Houle, 1964). Presently, in spite of spectacular growth in

nontraditional student enrollments, nontraditional students continue to prematurely withdraw at higher rates than traditional students (Bean and Metzner, 1985; Farabaugh, 1989; Hunter, 1992; Rose, 1997).

Characteristics of adult persisters versus adults who withdraw have also been contrasted in the literature (Brown, 1988; Christensen, 1990; Clayton & Smith, 1987). Students who are more focused and committed to their goals, have made a greater financial investment, actively practice time management, spend more time studying, and are able to obtain support (emotional) from a spouse or family members are more likely to persist. Both Staman (1980) and Christensen (1990) also found that nontraditional students who declare a major persist at better rates than nontraditional students who do not declare or plan a major. Nontraditional students who enroll full-time or take 12 or more credit hours per semester also persist better than their counterparts who enroll part-time or take a small number credit hours per semester (Christensen, 1990; Fetters, 1977).

Research also suggest that several risk factors detrimental to persistence exist and are associated with the nontraditional path through postsecondary education often taken by adults (Berkner, Cuccaro-Alamin, & McCormick, 1996; Choy & Ottinger, 1998; Farabaugh, 1989; Horn, 1998; Pantages & Creedon, 1978). Risk factors are found in demographic characteristics such as age, gender, and enrollment status. Risk factors are also found in students' academic achievements, that is their achieved grade point average and the number of credit hours they complete in their first semester or first year. According to Bean and Metzner (1985), risk factors found in environmental variables specific to nontraditional students include: finances, family responsibilities, and hours of employment. These factors are presumed to be more important for

nontraditional students and have direct effects on dropout decisions.

Demographic Variables

Research shows that demographic factors found to impact persistence or attrition include: (a) age, (b) gender, (c) ethnicity, (d) residency, (e) receipt of financial aid, (f) enrollment status or the number of credit hours enrolled, (g) being financially independent of parents or working full-time, and (h) delayed entry into higher education. Berkner, Cuccaro-Alamin, & McCormick (1996) noted that a direct relationship exists between age and entry into higher education. As age increases, the number of risk factors increases resulting in constraints that interfere with persistence and degree attainment. Bean and Metzner (1985) also stated that since older students have “more family responsibilities, hours of employment, and higher levels of absenteeism,” indirect effects of age on attrition may be seen. Pantages and Creedon (1978), however, found mixed results and concluded that age is not a primary factor in students’ premature withdrawal.

The literature on gender as a factor in attrition is also ambiguous. Astin (1975) reported that older women are more likely to prematurely withdraw. Farabaugh (1989) also found that nontraditional female students were more likely to prematurely withdraw than their male counterparts. Pantages and Creedon (1978), however, concluded that gender is not a significant variable in determining attrition unless it combines with other variables such as environmental, institutional, or scholastic factors. Conversely, Horn and Carroll (1996) stated that after controlling for other variables, women were significantly more likely to persist or attain degrees than men.

In 1975, Astin reported that African American students who attended predominately white postsecondary institutions had lower persistence than Caucasian students; however, with certain

background factors held constant, African American students were significantly less likely to prematurely withdraw in predominately black institutions. In 1980, Smith showed that at four-year, residence-oriented postsecondary institutions, no relationship existed between ethnicity and attrition. Hunter (1992) studied a group of nontraditional students attending a public, historically black university and also found that race/ethnicity did not significantly effect persistence. Horn and Carroll (1996), however, found significant difference in persistence and degree attainment between nontraditional African American, non-Hispanic students and Caucasian, non-Hispanic students. African American, non-Hispanic students had lower rates of persistence and degree attainment.

Living on campus facilitates involvement in campus activities and assists in building friendships with other college students. As noted by Pascarella and Terenzini (1991), the impact of residency on persistence is clear. Even when pre-college factors are controlled, living on campus has a statistically significant positive influence on persistence and completion of a bachelor's degree. Further, living near campus (versus commuting) has positive implications for persistence. Pascarella and Creedon, (1978) also noted that housing is a significant factor in attrition but not a primary factor. Bean and Metzger (1985) posited, however, that nontraditional students tend not to reside on campus or in campus housing and are often commuter students. They spend little time on campus outside of class and generally have fewer friends at college, less contact with faculty, and less participation in campus activities. Consequently, nontraditional students rely more on outside encouragement and family support.

Results from research on the impact of students receiving financial aid are mixed, in that some studies suggest receipt of financial aid is positively associated with degree completion, while

other studies report marginal significance (Pascarella and Terenzini, 1991). Rose (1997) found, however, that receipt of some type of financial aid not only impacted whether students continued in college, but it also impacted whether nontraditional students were able to enroll. Christensen (1990) found that receipt of financial aid was significantly related to persistence and students who persisted received some type of financial aid.

Students enrolled full-time subsequently take more credit hours and thus, have the opportunity to complete more credits, complete program requirements, and thus attain a degree. Research has shown that students enrolled part-time are prone to prematurely withdraw (Berkner, Cuccaro-Alamin, & McCormick, 1996; Fetters, 1977).

Because nontraditional students tend to be financially independent of parents or have to work full-time, ability to finance a college education is a concern (Bean and Metzner, 1985; Hunter, 1992; Rose, 1997). Research suggest that financial difficulty is positively related to attrition (Bean and Metzner, 1985). Horn (1998) further posited that working full-time while enrolled is associated with early departure.

Delayed entry into postsecondary education is often directly related to age, family responsibilities, or receipt of a GED diploma. Postponing enrollment into college immediately after high school increases students' risk of attrition (Horn and Carroll, 1996).

Academic Variables

Academic factors associated with attrition include (a) receipt of a nontraditional high school diploma, (b) no declared major, (c) number of credit hours completed during the first year, and (d) first-year grade point average (GPA). Not receiving a traditional high school diploma is considered by the NCES as one of the factors detrimental to postsecondary persistence (Berkner,

Cuccaro-Alamin, & McCormick, 1996). Horn and Carroll (1996) also found that among nontraditional students, possession of a GED diploma or certificate of completion compared to a traditional high school diploma was associated with lower rates of persistence.

Staman (1980) found that declaration of a major was strongly and positively associated with persistence among students aged 22 to 45. The students who were certain of their academic major were less likely to prematurely leave. Christensen (1990) also found that nontraditional students who had planned a major were more likely to persist than nontraditional students who had not planned a major.

Christensen (1990) noted that persisters were more likely to take more credit hours than students who prematurely withdraw. Metzner and Bean (1987) found that for commuter students, enrolling for fewer credit hours per term was significantly related to attrition. Metzner and Bean also found that number of hours enrolled was third best predictor of attrition.

Most important of the academic factors may be first semester or first-year grades. Students with poor academic performance are expected to stopout, transfer, or dropout. Metzner and Bean (1987) observed that GPA is one of the best predictors for premature withdrawal. Since, nearly one-third of all undergraduates leave higher education in their first year, the first year experience is noted as an important factor in examining student persistence (Beltzer, 1982; Horn, 1998). Moreover, first-year grade point average (GPA) not only reflects whether students are able to perform in higher education, but it also reflects whether students make adequate adjustments to the challenges of collegiate life (Pascarella and Terenzini, 1991).

Environmental Variables

Although environmental factors associated with attrition are not addressed in this study,

they merit a brief discussion. According to Bean and Metzner (1985), environmental factors specific to nontraditional students include finances, hours of employment, outside encouragement, family responsibility, and opportunity to transfer. These factors have direct effects on attrition decisions by nontraditional students. For example, nontraditional students who have financial concerns or problems, experience lack of support at home or cannot make adequate child care arrangements, or cannot adjust work schedules are more likely to stop out or dropout (Bean & Metzner, 1985; Hughes 1983; Rose, 1997). Additionally, although intent to leave (if a student plans to leave at a particular time) is not considered an environmental variable, it is highly predictive of actual attrition (Bean & Metzner, 1985).

Major Attrition Models

Models of traditional student attrition emphasize socialization and “institutional fit” (Bean & Metzner, 1985; Pantages & Creedon, 1978). Spady (1970) developed a model that emphasized the impact of students’ socialization to the campus and college grades on student persistence. Building upon Spady’s model, Tinto (1975) developed a theoretical model to explain why students drop out of college. Variables in Tinto’s theoretical model include: a student’s characteristics and background, academic and social integration, and goal and institutional commitment. For most research on student attrition, Tinto’s model was and continues to be the most widely used, because it has proven useful in explaining attrition for traditional undergraduate students. Tinto’s model, however, with emphasis on social integration, was found to be inappropriate for use with nontraditional students (Metzner and Bean, 1987). Metzner and Bean (1987) found that social integration variables failed to significantly effect GPA or attrition.

In 1985, Bean and Metzner posited that models of student attrition that emphasized the

impact of social and academic factors, but not environmental variables such as finances, hours of employment, outside encouragement and family responsibilities, did not readily apply to nontraditional college students. Their model, coupling background variables and academic variables such as study habits, academic advising, course availability, and major certainty with intent to leave, psychological outcome, and environmental variables, could better explain attrition of nontraditional college students. Bean and Metzner further noted that environmental variables are very important for nontraditional students. If nontraditional college students have good support from home, can adjust work schedules, find adequate child care, or pay for college, then even if they are struggling academically, they are expected to remain in school. Conversely, if they are receiving academic support and earning good grades, but not receiving support external to the institution, nontraditional students are likely to prematurely withdraw. In a 1987 study, Metzner and Bean noted that the best predictors of dropout were GPA and intent to leave followed by a background variable and the number of credit hours enrolled. In 1996, in an analysis of national data, Berkner, Cuccaro-Alamin, & McCormick supported Bean and Metzner's theory and confirmed that environmental variables and external constraints will interfere with nontraditional students' persistence and attainment of college degrees.

While several of the factors noted in the literature on attrition pertain to both traditional and nontraditional students, most characteristics associated with early departure are typically linked to nontraditional students. Moreover, although nontraditional students are noted as more motivated than traditional students, they continue to stopout, transfer, or dropout prior to degree completion at higher rates than traditional students.

History of General Educational Development (GED) Exam

During the war years of the 1940s, many young men who joined the armed services interrupted their traditional educational patterns. Unable to complete high school, they had no means of obtaining diplomas. Upon returning home, their opportunities in the work force were blocked as were opportunities for postsecondary education. To begin to address the needs of these young men, in 1942 under the auspices of the United States Armed Forces Institute, a team of civilian test experts developed high school equivalent tests. The tests designed to measure the outcomes and concepts of a four-year high school (non-technical) education included five subject areas – English Grammar, Social Studies, Natural Sciences, Literature, and Mathematics (Stewart, 1992). The five subject areas were included to reflect the curriculum covered in American public high schools. The result of the project was a battery of tests of general educational competency or proficiency that allowed students to “earn academic amnesty to offset the educational deficiencies they acquired at an earlier period of time in their lives” (Swarm, 1973, p. 7). The opportunity to document attainment of high-school level skills proved to be a significant aid to the service members whose academic careers were interrupted by the war (GED Examiner’s Manual, 1997). In 1943, the GED test was standardized through administration to 35,000 seniors in high schools across America (Stewart, 1992).

In 1945, at the request of the War Department’s Joint Army-Navy Committee on Welfare and Recreation, the American Council on Education (ACE) established the Commission on Accreditation of Service Experiences (CASE). CASE served as a civilian agency and clearinghouse to cooperate with all educational institutions, associations, organizations, and state departments concerned with the evaluation of service education courses and experience of service

personnel (Stewart, 1992). During 1945, the GED tests proved so popular with veterans who wanted to attend college that ACE established the Veterans' Testing Service to make the GED tests available to institutions of higher education for administration to veterans. By the fall of 1947, the use of the GED tests by veterans wishing to earn a high school equivalency certificate for either vocational purposes or to qualify for admission to institutions of higher learning proved so successful that state education departments began extending the use of the GED tests to all adult citizens (Sharon, 1972b).

From 1948 to 1955, several events rooted GED testing deeper into the fiber of America's education system. First, in 1948, ACE transferred the Veteran's Testing Service to the newly formed Educational Testing Service (Stewart, 1992). This placed the GED under the auspices of the organization that handled standardized tests which were utilized to assess student capability for collegiate acceptance. Comprehensive evaluation of the GED tests occurred in 1951 and in 1955, ACE conducted the first renorming of GED tests through a retest of a sample of nearly 39,000 graduating seniors selected from 834 schools.

In 1959, for the first time, more civilians took the test that year than did military personnel. Several years later (1963), in recognition of the transition to a program chiefly for non-veteran adult, the name Veterans' Testing Service was changed to GED Testing Service (GEDTS) (GED Examiner's Manual, 1997). GED tests also became available at overseas centers to American civilians and foreigners. In 1967, another norming took place.

The 1970s were a time of adjustment and expansion for the GED exam. Prior to 1970, GED tests had been developed for examinees with visual impairments. During the early 1970s, after the first conference of GED administrators, a Spanish-language test was made available

followed by a French version. In 1972, Sharon evaluated the validity of GED for admission of non high-school graduates to higher education (Stewart, 1992). In this study, Sharon (1972a) found that GED graduates were capable of successfully performing in higher education settings. In 1976, adults taking the GED test exceeded five million and in 1977, the test was renormed for the third time and 12 new tests were prepared (Stewart, 1992).

During 1987, the GED was renormed for the fourth time and underwent its second major revision. For the first time, students were required to write an essay as a part of the Writing Skills test. In 1991, ACE released a report based on a 1989 nationwide survey of GED candidates. The report showed the profile of GED adult students including their age, gender, race, disabilities, and educational plans (Baldwin, 1991). By 1991, the number of GED examinees exceeded 16 million (Stewart, 1992).

Since 1997, GEDTS serves more than 800,000 test takers annually (GED Examiner's Manual, 1997). GEDTS, and each state, province, or territorial department in partnership with local education institutions are responsible for providing testing. The overall success of the GED tests is demonstrated by all 50 states, the District of Columbia, U.S. insular areas and freely associated states, and 11 Canadian provinces and territories using scores earned on the examination as a means of awarding high school credentials (GED Examiner's Manual, 1997).

Individual states have the authority to establish their own minimum test scores (as long as the score is not less stringent than the commission's minimum score), the minimum age of GED candidates, and other rules and regulations needed to provide services. Further, because the GED is intended for people who missed their first opportunity to complete high school instruction, all eligible individuals must: (1) not have graduated from an accredited high school or received a high

school diploma, (2) not be enrolled in an accredited high school, (3) not be administered to persons under the age of 16, and (4) reside in the jurisdiction or meet the jurisdictions's residence requirement (GED Examiner's Manual, 1997).

Because the GED tests are designed to measure a broad range of academic knowledge and skills, questions on tests are classified by cognitive level using adaptation of Bloom's Taxonomy of Educational Objectives (GED Examiner's Manual, 1997). The test battery consists of writing skills, an essay, science, literature and arts, social studies, and mathematics. Standardization of GED tests is conducted by the use of a national sample of graduating high school seniors who establish the performance standard required to pass the tests (GED Examiner's Manual, 1997).

In 1997, in a widely publicized effort to bring standards in line with higher secondary school education standards, the GED Testing Service (GEDTS), raised the passing standard of the GED exam ("Higher Passing Standard," 1998). A new minimum score of 40 on each of the subtests is now required and an overall battery average of 45 must be achieved to pass. If students score a minimum of 40 on each subtest but do not obtain an overall battery score of 45, they do not pass the exam. Similarly, if examinees score an average overall battery of 45, but fail to score a minimum of 40 on each subtest, they do not pass.

Finally, in 1998, it was reported that since 1949, an estimated 13.6 million adults have earned a GED in lieu of a traditional high school diploma (Who Took the GED, 1999). Further, more than 90 percent of colleges and universities in the United States have policies to accept nontraditional graduates who have GED diplomas ("Higher Passing Standard," 1998).

Description of Subtests

The GED battery test is designed to measure the major and lasting academic outcomes

associated with four years of regular high school instruction (GED Examiner's Manual, 1997). The test battery consists of five subtests and each uses a multiple choice format with questions designed to test examinees' reading comprehension skills and their ability to understand broad concepts and generalizations.

The first subtest, Writing Skills, consists of two sections. Part one is multiple choice and measures the examinee's ability to edit sentences (sentence structure, usage, and mechanics) within the context of one or more paragraphs. Part two requires the examinee to respond in writing to an essay topic (GED Examiner's Manual, 1997).

The second subtest of Social Studies measures the examinee's ability to use knowledge and information about fundamental social studies concepts in a variety of ways. Test items come from five content areas: history, political science, economics, behavioral science, and geography (GED Examiner's Manual, 1997).

The third subtest, Science, is drawn from life sciences and physical sciences. Test items measure abstract reasoning and problem-solving ability. Test items are related to conceptual themes that include conservation of mass and energy, interactions, and relationships.

The fourth subtest, Interpreting Literature and Arts is a passage-based test that measures the examinee's ability to comprehend and analyze reading selections and to apply interpretations to new contexts. Popular Literature, Classical Literature, and Commentary on the Arts are the three content areas (GED Examiner's Manual, 1997).

Finally, Mathematics measures problem-solving skills in the following content areas: arithmetic, algebra, geometry, measurement, number relationships, and data analysis. The focus of the test items is to measure the examinee's ability to solve mathematical problems in practical

contexts (GED Examiner's Manual, 1997).

GED Examination Statistics: 1997 - 1999

In 1997, a total of 772,461 took the GED test worldwide. This number was higher than the record number of 758,570 established in 1996 – the highest in the 57 year history of the testing program (Strosnider, 1997). Of the 772,461 examinees, 495,873 (68.6%) earned the GED diploma (Who Took the GED, 1998); 65.4% of adults taking the GED test planned to use the diploma to pursue postsecondary training and education, compared with 37.8 % twenty years ago (Who Took the GED, 1998). The increase reflects: (1) GED candidates' awareness that economic success is strongly linked to postsecondary education and training and (2) the changes in the today's labor market in which education is a major key to performance (Ikenberry, 1998).

In 1998, more than 718,000 adults world-wide completed the GED tests. Of those completing the tests, 509,576 (70.9%) earned their diplomas (Who Took the GED, 1999). An increase occurred in the number of GED students who reported that they took the test for further training and education beyond the high school level. Sixty-seven percent was reported for United States adults and 53.6% for Canadian adults.

In 1999, 750,714 adults took the GED. The number of adults taking the test increased by almost 32,000 over the number reported for 1998. Of the 750,714 students who completed the test, 526,411 (70.1%) met score requirements and earned their GED (Who Took the GED, 2000). Overall, 65% of the GED examinees reported that they took the tests to further their training and education.

The primary use of the GED test is to measure, as directly as possible, the major ideas and intellectual skills that are acquired during four years of high school (Virginia's General

Educational Development, 2000). The primary use of the test is to appraise the educational level of adults. For the benefit of those who did not complete a formal high school level education, the GED tests are designed to recognize their educational growth (Swarm, 1973). Numerous nontraditional students have been granted high school equivalency diplomas which signify that they have successfully passed the GED battery of tests and have demonstrated competency in the high school curriculum.

Nontraditional Students in Higher Education

With the exception of the World War II years, children under the age of 15 have always been the largest single age group in the country. The United States, however, is becoming a nation of adults (Cross, 1981, p. 3). In 1976, the National Center for Education Statistics predicted that by the year 2000, the population of America would be dominated by persons 30 to 44 years of age, with a rising curve of 45 to 64 year-olds (Cross, 1981, p. 3). In 1998, the median age for the total population of America was 35.2 years; persons age 25-29 totaled 18,588,000 (6.87%) and persons 30 to 44 years of age totaled 64,706,000 (23.9%) of the total population. Persons age 45 to 64 totaled 57,264,000 (21.1%) of the total population (U.S. Census Bureau, 1999, p. 15). An increase in the adult population resulted from the years immediately following World War II – the baby boom years – and the children born to the baby boomers – the baby bust years. As both groups have aged, they have systematically demanded expansion, at all levels, of America's education system. Their sheer numbers have been pervasive and influential. The presence of both groups on the campus of many four-year colleges and universities across the country has changed the profile of the typical college student (Manning, 1992; Marrapese, 1989; Mollison, 2000).

The National Center for Education Statistics (NCES) defines nontraditional college students as those students who possess at least one of the seven risk factors – delayed enrollment, being financially independent, having children, being a single parent, being a GED recipient, part-time attendance, or working full-time while enrolled in college (Berkner, Cuccaro-Alamin, & McCormick, 1996). The term “nontraditional” applies to participants in higher education who are *different* from traditional students or in some way, have needs that differ from the traditional 18 year-old who comes to college directly after high school (Loudermilk, 1995). Considered in the early 1970s as the new student in higher education, nontraditional students were characterized as high risk students for attrition, marginal, educationally disadvantaged, and academically unsuccessful (Swarm, 1973). Cross (1971) described the new student in higher education as one who was older, had gained educational experience outside of the formal classroom, and returned to institutions of higher education for various reasons. Adults, women, and young people from ethnic minorities primarily defined the nontraditional student population, and they entered higher education institutions under and with different circumstances than traditional 18 year old students.

Nontraditional students possess some of the same characteristics as they did thirty years ago. They are older students who range in age from 23 to 90; many are old enough to have children in college and in some cases, grandchildren (Loudermilk, 1995). Whether they have returned for mid-life career changes, improving skills and credentials, battling layoffs, starting over, or following a dream (Manning, 1992), nontraditional students represent diverse ethnic and social backgrounds. They are a mosaic of races that reflect the fiber of America’s multiculturalism; they have disabilities or are homebound or have lifestyles that make them too mobile to meet most college residency requirements (Gaines, 1993). Some are grandparents;

some are single parents with toddlers in tow (Manning, 1992). Some are participants in Welfare to Work programs seeking vocational skills at a local community college or a bachelor's degree at the local college; others are high school dropouts who earned a GED and continue to persevere to further their education (Yasuda, 2000). Whereas some nontraditional students return to institutions of higher education to create a better life for themselves, others return to create a better life for their children (Sasseville, 1999).

Further, some nontraditional students are parents who return to school after working at least five years and more; they return to institutions of higher education to finish a degree program they never completed or they left in order to raise a family (Gaines, 1993). Other nontraditional students enter institutions higher education for the first time for personal or professional fulfillment (Marrapese, 1989). Most have significant family commitments and because of family obligations, they must continue working full-time while attending school on a part-time basis.

Nontraditional students require colleges and universities to change or expand their practices and policies. Because numerous nontraditional students are forced to pursue and attain educational goals on a part-time basis, they need classes offered at night, on weekends, on campus and off campus; they need daycare centers, tutors, and instruction geared toward adult learning methods (Manning, 1992). They also need extra support from instructors and counselors, because they constantly face challenges of figuring out ways to juggle their adult responsibilities with school (Manning, 1992). Because of their lifestyles, it may take nontraditional students just over seven years to complete postsecondary education (Mollison, 2000).

For many nontraditional students, institutions of higher education can be intimidating. They may feel that they do not have the study skills and “the campus savvy” (Curtin, 1998) to adjust to the college environment. Moreover, because higher education institutions can be chaotic and impersonal, nontraditional students may be undermined by self-doubt and apprehension (Yasuda, 1995). Nontraditional students, however, recognize the value of lifelong learning and support the idea that education does not stop. They challenge higher education institutions to redefine accessibility and college services and change policies and procedures that dictate how education is offered. They impel both two- and four-year colleges and universities to explore and provide distance learning programs which makes lifelong education feasible and attractive. An increasing number of nontraditional students also seek and utilize distance learning programs as a way of balancing time constraints and economizing the costs of their education (Distance Learning, 1998).

For over 20 years, nontraditional students have been changing the face of the typical college student. In the fall of 1977, 2.45 million college enrollments were students age 30 and over. By 1987, that number increased to 3.39 million (Marrapese, 1989). From 1988 to 1998, the majority of students enrolled in college courses shifted from 18 to 22 year olds to older, “nontraditional” students. In 1990, the United States Department of Education (USDE) reported that 43% of college students were over the age of 24 and predicted that by 1995, 46.4% of all college students would be 24 or older (Manning, 1992).

During the 1999 school year, more than 76 million students 25 and older took at least one course in an institution of higher education (Mollison, 2000). And for fall semester 2000, it was projected that for nationwide enrollments of college students, the average age would be over 26

and 42% of students in higher education would be 25 or older; women 25 and older would comprise 26% of the student population and men 25 and older would comprise 16% of college student enrollment (Mollison, 2000).

General Educational Development (GED) Students

Who are GED students? In a series of articles commemorating the first 50 years of the GED Testing program, various authors described GED students and their experiences (Allen & Jones, 1992). The most common aspect of the GED student population is that they did not complete the traditional four years of high school. They range in age from teen to senior citizens. Their backgrounds are diverse in ethnicity, socioeconomic status, and race. Their educational experiences vary as well as their reasons for withdrawing from high school (Allen & Jones, 1992). GED students, however, are the first to acknowledge the opportunities gained by successfully completing the high school equivalency exam (Barber, 1992; Swarm, 1973).

Who are GED graduates? Most GED diploma graduates are people who feel a sense of accomplishment, raised self-esteem, and hope for the future (Allen & Jones, 1992; Swarm, 1973). Follow-up studies indicated that approximately 50% of all GED diploma students participate in some type of educational program after obtaining their diplomas (McElroy, 1990). GED diploma graduates also achieved their status from different paths. Whether they pursued a GED diploma and an associate's degree simultaneously (Manning, 1992) or persisted in following other educational or career dreams, GED diploma graduates have completed a pertinent portion of their education.

A Profile of the GED Students

The most common aspect of the entire GED student population is that they all withdraw

from formal secondary school education prior to graduation (Swarm, 1973). Sharon (1972a, 1972c) reported that GED students cited several reasons for leaving secondary school including: financial difficulties, joining the armed forces, disinterest and boredom or frustration with school systems, domestic, emotional, or personal problems, or lack of motivation. Thought of as a high risk student, remedial or marginal student, ironically, the GED student is more serious about education than the majority of non-GED students. This may be due to the typical maturity of GED diploma students. Studies show that older students do better scholastically than younger students (Sharon, 1972b).

In 1989, 614,142 people took the GED Tests in the United States and its territories. In a 1991 ACE report, "GED Profiles: Adults in Transition," results of a national survey of the 1989 examinees showed that over half (62%) of the GED examinees were under the age of 25 and approximately 51% of those students were between age 18 and 24. Women represented 56% of the GED examinee population and more older women than older men took the exam. Regarding race, 31% of those persons aged 18 to 44 and approximately 26% of the candidates aged 17 and under belonged to an underrepresented group. Additionally, seven percent of the GED candidates (an estimated 43,000) reported they had a disability and of those reporting a disability, 19% disclosed having a specific learning disability (LD); as age increased, the percentage of candidates reporting disabilities increased. Finally, regarding prior education and education endeavors, nearly 78% of the GED candidates had completed 10th grade or higher before leaving high school and nearly 47% reported completing 11th grade or higher. Of the examinees aged 17 and younger, 29% (nearly 3 in 10) took the test to be admitted to a college or university and more than one in four candidates, aged 18 to 24 (26%), took the test to enroll in postsecondary

education. Most of the candidates, an estimated 190,000 (31%), planned to enroll in community or junior colleges and an estimated 68,000 (11%) planned to enroll in a four-year postsecondary institution.

A Census of Virginia's GED Student Population

The profile of GED students in Virginia is similar to that of the national profile of GED students noted in ACE's 1991 GED student profile. GED students ranged in age and came from diverse backgrounds. Data showed that the majority of GED examinees had some high school education. Regarding gender, Virginia's GED candidates differed from the national statistical data on GED candidates, in that in the years reviewed, more males took the GED test than females. Further, a lower number of students reported learning disabilities (LD). Finally, a higher percentage of Virginia GED candidates took the GED to further their education than the national average.

In 1997, there was a total of 14,517 GED examinees. Of those candidates, 9,290 (about 64%) were under the age of 25 and approximately 51% were between age of 18 and 24; 21.5% were between age 25 and 39. Sixty-five percent of examinees reported completing the 10th grade or higher and 34% reported completing the 11th grade or higher (1997 Virginia GED Statistical Report, 1998). Of those taking the GED, 10,547 (almost 73%) reported that they took the test to qualify for further education. No information was available concerning race/ethnicity, gender, and disability.

In 1998, the number of GED examinees increased to 14,661. Of those persons tested: (1) 9,530 (65%) were under the age of the age of 25 and 51% were between the age of 18 and 24; (2) 6,677 (45.5%) were female and 7,967 (54.3%) were male (17 were reported as missing or

unknown); (3) approximately 40% (5,937) of examinees reported belonging to an underrepresented racial group – groups included Hispanic, American Indian, Asian American, African American, Pacific Islander, Alaska Native, and Other and 8,604 (almost 59%) reported Caucasian; (4) 171 examinees required special accommodations for testing and less than one percent reported a LD; (5) almost 66% of the candidates had completed 10th grade or higher and nearly 40% reported completing 11th grade or higher; (6) 10,635 (almost 73%) of examinees took the GED tests to be admitted to a college or university (1998 Virginia GED Statistical Report, 1999).

In 1999, the number of GED candidates in Virginia increased by over 2,000. Of the 16,676 examinees, nearly 64% were under the age of 25 and almost 50% were between age 18 and 24. The average age was 25. More males than females took the test, 9,249 (55%) and 7,409 (44%), respectively; 18 reported missing/unknown. By racial/ethnic background, 41% (6,901 examinees) reported belonging to an underrepresented population and 9,633 (almost 58%) were Caucasian. Less than one percent (77 candidates) reported a LD and less than one percent (185 candidates) required special accommodations. Sixty-four percent of the candidates reported completing 10th grade or higher and nearly 34% reported completing 11th grade or higher; similar to 1998, over 3,000 candidates reported completing the 9th grade. Approximately the same number of candidates in 1999 as in 1998 reported taking the GED to further their education – 12,016 (72%) (1999 Virginia GED Statistical Report, 2000).

The data on Virginia's GED student population showed that the majority of people taking the GED are under the age of 25. More males take the test than females and a decline has occurred in the number of examinees who complete the 11th grade or higher.

A Profile of GED Graduates in Higher Education

As noted earlier, the first GED diploma students were veteran males who withdrew from high school to serve in the armed services. Results from an early study completed in 1954 on veterans attending college showed that substantial numbers of GED matriculants were successful in college and although in general, their scholastic achievement was not quite as high as that of high school graduates, the differences were surprisingly small (Sharon, 1972a).

By 1972, Sharon found the GED diploma college student to be a non-typical or nontraditional student about 10 years older than the average freshmen entering college. Often, a long period of time (10 years or more) elapsed between leaving high school and entering a collegiate environment. Sharon (1972c) also reported that the results of a survey completed by GED diploma students attending college indicated most had earned a grade point average between a B and a C; half of the students had higher GPAs than the mean GPA of all students at their college. Sharon noted that this was quite commendable since most GED students also held full-time jobs. Further, most GED students decided to go to college before taking the GED test, and students who earned higher scores on the GED enrolled in senior colleges. Those GED graduates who earned lower scores on the GED opted for junior colleges (Sharon, 1972a).

In 1982, Behal conducted a follow-up of a nationwide survey conducted in 1980. The purpose of the study was to determine characteristics of GED diploma students enrolled in postsecondary institutions. Nearly 30% of the GED students reported taking the GED test to meet postsecondary education admission requirements. Of the 647 respondents, 320 (49%) enrolled in a postsecondary institution. The mean age was 25.8 years. Males represented 43% of graduates enrolled in a postsecondary institution, while females represented 57%; women enrolled

more at four-year institutions and men at technical schools. Persons in the age groups 15 to 19, 30 to 34, and 40 to 44 predominantly attended community or junior colleges. Although a small number of members of other age groups attended four-year institutions, more persons age 20 to 24 attended a four-year institution – 10% total compared to 5% of 15 to 19 year olds, 3% of 25 to 29 year olds, 1% of 30 to 39 year olds (Behal, 1983). Overall, 28% of GED graduates enrolled in community or junior colleges, 17% in technical schools, 13% in trade schools, 16% in apprenticeships or on-the-job training programs, and the lowest number enrolled in four-year institutions (5.6%).

In Virginia, the Community College System annually collects data on all enrolled students. At my request, the division of Academic Services and Research compiled data from 1990 to 1999 that reflects a profile of GED diploma students who entered the 25 community colleges across the state. The data showed that the number of GED students attending community college decreased from 33,819 (from 1990 - 1994) to 30,854 (from 1995 - 1999). The number of females enrolled, however, increased from 59% to 64%. Contrarily, males comprised 41% of the population, but declined to 36% by the end of decade. The number of Caucasian students enrolled declined from 78% to 76%, but the number of GED diploma students from underrepresented groups (African American, Hispanic, Asian, American Indian, and Other) increased from 22% to 24% of the enrolled population. Regarding enrollment status, full-time student enrollment totaled 29% during the 1990s and 71% for part-time student enrollment. Finally, the number of GED diploma students who participated in Transfer programs (enrolled in a curriculum program designed to provide the education obtained in the first two years of an undergraduate program at a four-year institution) increased from 26% to 29%.

Analysis of GED diploma students enrolled in Virginia's Community Colleges showed that the number of Caucasian males decreased during the 1990s. Additionally, although percentages for African Americans remained relatively constant (17.1% 1990 - 1994 and 17.3% 1995 - 1999), percentages for other underrepresented groups – Hispanics, Asians, American Indians, and Other – increased from 4.7% (1990 - 1994) to 6.7% (1995 - 1999).

Educational Settings - Performance of GED Students

Most often, studies conducted on GED diploma students in postsecondary institutions compare GED graduates to high school graduates. Comparisons are made between students' academic performance (GPAs and number of credit hours earned) and persistence and attrition behavior. However, GED diploma college students are nontraditional and differ from traditional college students. Kroll (1993) noted that major differences exist between the life-status of GED diploma students and high school diploma students. GED diploma students are typically older, more likely to be married women, less likely to be full-time students, and more likely to need and receive financial assistance. Their adult role behaviors compete with the role of the student and create constraints on course completion, attendance, and other variables used to measure academic success. Hence, conceptualizing GED diploma graduates and high school graduates as equal in all respects except certification is inappropriate (Kroll, 1993). Moreover, the very factors that distinguish nontraditional students and traditional students are noted as risk factors for persistence and tend to cause attrition. Thus, studies comparing the two groups that do not cover extended periods of time introduce biases favoring high school diploma students (Soltz, 1996).

The evaluation of studies in this literature review was limited to those studies that examined the academic performance or persistence and attrition behavior of GED diploma

students at two-year institutions and those GED diploma students who applied directly to four-year institutions. Because there is such a limited number of studies that concentrate only on GED diploma college students, some studies reviewed included a secondary component of comparison between GED diploma students and high school graduates. I chose not to emphasize the comparison information, because of the noted differences between nontraditional college students and traditional college students.

Two-year Institutions

Because many GED diploma students pursue postsecondary education at two-year institutions, it is valuable to examine their performance in these institutions. In 1977, Rogers conducted a study at a small, mid-western, urban commuter college to determine the academic performance of GED diploma students. Of the 200 or more GED diploma students identified, 126 presented information needed to compare individual GED test scores and first semester GPAs. Stepwise multiple regression was utilized to analyze individual GED test scores and first semester GPAs. Findings showed the mean age of GED diploma students was 30 years old – much older than traditional college freshmen. On a four point scale, the first semester average GPA was 1.71 with 59% of the students functioning at or below 1.99. Rogers concluded that this sample of GED students did not perform well during their first semester of college. Further, GED diploma students should be expected to experience academic difficulties during their first semester of college regardless of age or GED average. Further, GED test scores cannot be used to predict academic success.

Contrary to Roger's findings, Beltzer (1985) found that GED diploma students could successfully complete college courses. During spring semester 1982, Beltzer studied the records

of 198 GED diploma students and 201 traditional high school diploma students who entered Queensborough Community College in the fall of 1981. The purpose of the study was to identify persisters (those who registered for the fall 1982) and first-year dropouts. The mean age of GED diploma students was 26.8, and most of the students in the study were mothers returning to college to obtain career training. Beltzer's major findings were that GED diploma students persisted equally to the high school students, and older GED students had a slightly higher persistence rate than those GED students age 17 to 19. He also noted that first-year GPA was the most important predictor of persistence. Beltzer concluded that postsecondary institutions, particularly community colleges, should encourage recruitment of GED diploma students. Additionally, for GED students and other nontraditional students, institutions must address the facilitation of academic integration, possibly through quality academic advising and orientation programs.

In 1988, Klein and Grise (1988) carried out a study designed to ascertain the success of GED diploma students and compare them with traditional high school graduates. A survey questionnaire was mailed to Florida's 28 community colleges; 10 institutions responded. The average GPA for GED diploma students was in the C range. GED diploma students took the same length time of time (approximately six semesters) to graduate as other students and 25% of GED students completed degree programs. Noted also by the authors was the difficulty in obtaining data on GED diploma students. Because GED diploma students were not treated any differently from students with a traditional high school diploma, Florida's community college registrars did not keep any special records to track GED students. The authors concluded that the results of their findings should help dispel misconceptions held by educators about GED

diploma students' capability in higher education, specifically community college settings.

To decide if a statistically significant difference existed between the GPA of GED diploma students and traditional high school diploma students at Kankakee Community College, McElroy (1990) randomly chose 50 students from each population of students and t tested their mean GPA scores. McElroy found GED diploma students had a slightly higher GPA (2.93) than high school diploma students. She concluded that the significant difference results were surprising, since the literature reviewed indicated no significant difference existed or better yet, high school graduates typically attain higher GPAs.

In 1990, Turner surveyed 87 GED diploma students to ascertain which factors lead to their success at North Shore Community College. The average age of GED students was 25. Turner found although age was not a significant factor for success, successful GED diploma students were most likely older than 20 years of age and were self-motivated, that is aware of college opportunities and prior to taking the GED test had made the decision to enroll in college. She also found that GED test scores could not be used to predict college GPA. Additionally, working full-time had a negative influence on GED students' GPAs, whereas working part-time had no influence. Turner also found that successful GED college students had consistent contact with one advisor or program coordinator and had support from both family and friends and college faculty. Turner concluded and recommended: (1) college enrollment be encouraged for all GED diploma students and not just GED students with high GED test scores, (2) college admissions' officers develop appropriate recruiting techniques for GED students and other nontraditional students, and (3) colleges and GED programs preparing students for the GED test establish linkages with colleges. These linkages should be designed to allow GED students to

visit and tour college campuses and to sit in on classes in order to educate them about postsecondary expectations prior to their enrollment.

Stadler's (1994) study on GED diploma student performance at a Milwaukee Technical College showed information about 1,877 GED diploma students enrolled between 1989 and 1992. The average age of GED students was 32. Sixty percent of the grades earned by GED students were C- or better. GED diploma students, however, had a higher proportion of D grades and almost double the percentage of U or failing grades than the entire student population. GED students also perceived themselves as more economically deprived than other student populations and impacted more by social and institutional problems. Stadler concluded that although the GED diploma student population is somewhat less prepared for postsecondary education than high school graduates, they can achieve considerable success in completing coursework, earn acceptable GPAs, and earn comparable grades to other college students.

In a longitudinal study, Soltz (1996) examined the records of 5,616 GED diploma students (2,734 men and 2,882 women) who had matriculated into a large, midwestern community college over a 23 year period. The findings of Soltz's study showed the average cumulative GPA for 4,336 (77%) GED diploma students was 1.97 - just under a C, and 393 students earned GPAs of 4.00. Almost one-fourth of the students (1,280 or 22.8%) did not attempt any academic work for credit and utilized non-credit courses. Similarly, one-fourth of the students (1,047 or 24.1%) failed to earn any credit hours. Seventy-two percent of GED diploma students attempted an average of 16.3 credit hours, but only 16.8% achieved sophomore status. Female GED diploma students earned more credit hours than male students, 15 and 12.4, respectively. Further, females not only achieved higher GPAs than males, 2.12 and 1.82, respectively, they also earned at a

statistically significant level, more degrees than their male counterparts. Concerning the first semester GPA, Soltz found that GED diploma students earned a cumulative GPA of 1.91, and 2,671 students who completed the first year earned a GPA of 2.02. GPAs increased as GED diploma students persisted. Students that persisted through 10 semesters of work attained a mean cumulative GPA of 2.51. Soltz noted that relatively high attrition rates existed across most disciplines. Finally, graduation rates for GED diploma students showed of the 4,336 GED diploma students in the sample, 206 (4.8%) graduated. However, of the 2,385 GED diploma students who entered the college prior to 1989, 177 (7.4%) graduated. Regarding graduation, Soltz noted that 35% or almost 1,500 students in the sample took their first course fall semester 1989 or later and had insufficient time to obtain a degree. Soltz concluded that in examining cross-sectional data, academic performance was adequate for GED diploma students who did persist and the 7.4% graduation rate was similar to the graduation rate for the college as whole. Longitudinal data covering an extended period of time, however, showed that a sizable portion of GED diploma students can be expected to experience failure in a community college.

To determine how well traditional-aged GED diploma students, that is those students 21 years of age or younger at the time of GED certification, progressed academically, Hamilton (1998) studied 276 GED diploma students who enrolled in Gainesville Community College from fall semester 1991 to fall semester 1996. Ninety-four percent of the students were Caucasian and a slightly higher percentage of males (53%) than females (47%) comprised the sample. The average GPA of 2.14 for GED diploma students was slightly lower than the typical 2.60 GPA for other students at the college. Twenty-three percent of the GED diploma students did not take any academic credit courses while enrolled. Moreover, 85% of the students were required to take

one or more remedial courses -- most in developmental mathematics. One year persistence rates for traditional-aged GED diploma students averaged 43% compared to 62% for the College as a whole. Hamilton noted that the 43% may have been inflated, because some GED diploma students did not persist for one school calendar year, that is they did not persist from one fall semester to the next fall semester. Instead, these students entered in the spring, completed the spring semester, and were enrolled for the following fall semester. Hamilton did not provide conclusions for his study.

Four-year Colleges and Universities

Most studies conducted on the performance of GED college students and the comparison of GED diploma students to traditional high school diploma students have occurred in two-year institutions – community colleges and vocational/technical schools. Several studies, however, have addressed the academic performance and persistence and attrition of GED diploma students enrolled in four-year colleges and universities.

In 1972a, Amiel Sharon completed a study on 1,367 GED diploma students enrolled in 40 colleges and universities across the United States. Sharon's objectives were to: (1) describe the background and experiences of GED diploma students on the basis of their GED test scores, (2) determine the validity of using the GED for admission to a variety of postsecondary institutions, and (3) describe the advantages and problems of granting academic credit via GED tests. The median age for GED students was 28 years old, and most of the students decided to go to college before taking the GED test. Findings showed 45% of the GED diploma students had grades equal to or higher than that of the traditional high school students. Sharon also reported that GED tests are useful and appropriate for predicting college success, specifically, higher scores on

the Social Studies test predict success at two-year institutions and higher scores on the Literature test predict success in four-year colleges. GED diploma students enrolled in four-year institutions also earned slightly higher scores on all GED tests than those enrolled in two-year institutions.

Additionally, attrition rates did not appear to be different between GED diploma students and other students. Seventy-two percent of the GED diploma students persisted during the survey which ranged from six months to 2 ½ years. Although a few of the GED diploma students mentioned academic problems (especially in mathematics), as a group, they were nearly as successful as the high school diploma students. Last, 21% of GED undergraduates stated that financing their education was a major problem and that they might not be able to complete college due to financial difficulties. Sharon concluded that GED diploma students can perform as well as traditional high school students and recommended that colleges not hesitate to admit GED diploma students.

In 1981, at the University of Victoria in Canada, J. D. Ayers designed a study to determine if patterns of success for GED diploma students could be ascertained by using cut-off points on GED standard scores. His study collected data over a four-year period on 91 prison inmates accepted to the university. Ayers found that GED diploma students with higher GED scores attained higher first-year grades. Failure rates, however, increased with lower GED test scores, that is standard test scores below 48.4. There was no obvious cut-off point for GED scores, because GED students with standard scores lower than 45 had successfully completed university courses. Ayers concluded by noting that with remedial help, GED diploma students with low standard scores on the GED test could be successful if they persist. He also recommended: (1) institutions should routinely collect information on GED diploma students,

(2) institutions with experience using GED test scores as a selection instrument should provide data to determine if cut-off points are useful, and (3) data should be collected over time to determine if any trends exist.

C. C. Swarm (1981) conducted a three-part study, over a 10 year period, to observe the performance and progress of GED diploma students. The first study, completed in 1973, focused on 184 GED diploma students enrolled at all campuses of the Indiana University system. The second study, researched during 1977 - 1978, focused on 109 GED diploma students admitted to Chicago State University and Northeastern Illinois University. The third study, 1980 - 1981, examined 981 GED diploma students attending college in various states. Swarm found that the average age of GED student cohorts varied. Whereas average age for one group of respondents was between 31 and 35 years old, another group averaged 19 to 32. Similarly, enrollment status for one group of respondents showed 68% were attending school full-time and working part-time, while in another group 53% were employed full-time and attending school part-time. Students attending full-time and working part-time had an average GPA of 3.5. Results from interviews with GED diploma undergraduates also noted that assistance is needed in such areas as writing and study skills, library research skills, and reading improvement skills, and tutorial help is needed in the very beginning of college enrollment. Results in the third study also showed that 70% of GED diploma undergraduates indicated performing at C grade level or better. Swarm concluded: (1) GED diploma students do not appear to be educationally disadvantaged, but do feel that they need help in distinct areas such as reading and study skills, (2) GED diploma students can perform adequately and comparably to standard high school graduates, and (3) GED diploma students who achieve higher standard test scores (scores on the individual subtests ranging in the 50s, 60s,

and 70s) tend to achieve better in college. The findings in Swarm's study were important, because they provided information about the assistance needed by GED diploma students to successfully complete college courses.

Another study that noted the success of GED diploma students was that of Larry Rinecones (1982). Rinecones conducted a study with migrant workers that participated in a college assistance program at St. Edwards University in Texas. The program was designed to facilitate access and, with comprehensive support activities, the successful completion of two semesters of college for migrant students. Students were given assistance in academic coordination and curriculum, tutoring, and counseling. Rinecone found that 14 of the 19 GED students (almost 76%) completed the first year. Additionally, although GED diploma students earned slightly less credit hours than high school diploma students, they averaged a 2.38 GPA.

In 1984, Sherril Colert designed a longitudinal study to gather descriptive data about 94 GED diploma students who had attended Brandon University in Manitoba, Canada for at least one term from 1972 to spring 1984. Colert analyzed students' academic achievement, attrition rate, and students' reactions to college life. The average age for GED students was 26. The average first semester GPA was 1.89. GED diploma female undergraduates earned higher GPAs than GED diploma male undergraduates, 2.18 and 1.62, respectively. Colert also found that gender and age were important factors in achieving higher grade point averages. Additionally, male GED undergraduates had a higher attrition rate (30%) than female GED undergraduates (13%). Colert concluded that female GED undergraduates who had high GED test scores, were over the age of 26, and took one or two courses for interest only, achieved academic success.

Lois Quinn (1986) investigated the performance of 2,895 GED diploma students who entered the 13 campuses of the University of Wisconsin from fall of 1979 to fall of 1984. Quinn found that even though some of the GED diploma students performed well in school, retention was a serious problem. Of the 2,895 GED enrollees, 1,986 (approximately 69%) left college before graduation. Further, of the 1,982 GED students who left college before graduation, 35% earned no credit hours, and 85% did not reach their sophomore year. Quinn did not mention any attempts to follow-up on students who withdrew. Quinn also compared GED diploma students to high school diploma students and reported that high school graduates significantly outperformed GED graduates in terms of grades, the number of credit hours earned, and semesters completed. No information, however, was provided on the demographics of the GED diploma students or the high school graduates. Additionally, Quinn noted that one-fourth of GED diploma students were required to take remedial math and one-fifth were required to take remedial English. At the Madison campus, however, the first semester grades of GED diploma students who had completed high school algebra and geometry were higher than high school graduates from the bottom half of their high school class. Age was not a significant factor in predicting first semester success. Similarly, GED score ranges were not helpful predictors. Concerning graduation, four percent of the 394 new freshmen enrolled in 1979 - 1980 earned college degrees by spring of 1985. Quinn noted 42 GED diploma students graduated and many remained in good standing through their period of enrollment. However, of the GED diploma students who graduated, 18 transferred to the University system from other colleges and universities which indicated that transfer students performed better, had better retention rates, and graduated in higher numbers than GED diploma students who had enrolled in college for the first time.

Quinn failed to provide conclusions or interpretations in her 1986 study. She did, however, include comments in an article, "Are GED Certificate Holders ready for postsecondary education?," Quinn and Haberman (1986). Quinn stated that GED diploma students are high risk students in four-year postsecondary institutions, that is they are likely to drop out and not complete their degrees. Further, GED diploma students with low reading levels (as low as fifth or sixth grade) "are not good prospects, even for remedial help, at the college level" (p. 80).

In 1989, Owens assessed the first semester college performance of 506 GED diploma students who enrolled in the University of Alaska Anchorage within four years of GED completion. Information was collected to examine first semester academic performance, students' GPAs, and the number of students who completed degrees in four years. The mean age for the sample was 24 and the overall average GPA was 1.59. Owens noted that the average GPA was skewed, because approximately 200 (40%) of the students earned no GPA as a result of dropping out of courses. Approximately 50% of the students completed at least one credit course in their first semester and 49% had a C or above GPA. Correlational tests on age upon enrollment and GPA showed that age was a significant factor in successful course completion. GED students over the age of 25 years-old achieved higher success rate in completing courses. A total of 18 students (3.6%) earned degrees, however, only 2 students earned a bachelor's degree. Owens concluded that GED diploma students, though academically prepared for college courses, can be expected to experience difficulties their first semester. However, factors such as motivation, family or peer emotional support, study skills, or time management skills promote college success and all bear on the college success of GED diploma college students.

M. H. Sultan (1989) designed a study to examine the performance of 37 GED diploma students who graduated with baccalaureate degrees from two, state-supported universities in Mississippi. Sultan reported that two-thirds of the GED diploma students were female and the average age was approximately 31 years old. GED diploma students took 5.8 years to graduate. Further, the average GPA at graduation for GED diploma students was 3.1, slightly higher than the 3.0 average GPA for high school graduates. The author concluded that GED diploma students possessed the necessary academic skills and knowledge needed to achieve success in four-year postsecondary education institutions.

Summary

The acquisition of a GED diploma provides an opportunity for those students who fail to complete a traditional, four-year high school diploma to earn a high school equivalency diploma. Often considered nontraditional, GED students use their diploma to continue education in postsecondary institutions. Although most research indicates GED diploma students can perform in two- and four-year postsecondary institutions, some studies find high attrition rates and below C grade level GPAs for GED diploma college students.

To date, many studies conducted on GED diploma students in higher education examine academic performance (GPAs or credit hours earned). Comparisons have also been conducted between GED diploma students and high school diploma students. The validity of comparing the students, however, has been questioned since the groups obviously differ demographically. Moreover, most studies have been conducted at one institution. However, because many of these studies involve only one institution, generalizability is an issue. More studies have been conducted for GED diploma students enrolled in two-year institutions than in four-year

institutions. This may be because many GED diploma students utilize two-year institutions as an initiating point of their postsecondary education trek and may feel they can be more successful in two-year institutions. Studies show, however, that GED diploma students can perform in four-year postsecondary institutions and over time, not only earn comparable grades to other students but also complete degree requirements and earn degrees.

Only one study found examined GED diploma students' academic performance and persistence and attrition rates in more than one institution, that is a state-wide system. No studies were found on the performance, persistence, or attrition of GED diploma students in Virginia's four-year postsecondary institutions. Further, no studies were found that compared GED diploma college students to another cohort of nontraditional college students. Thus, because of the limited information available, it was my intention to investigate academic performance and persistence and attrition behavior of GED diploma students who applied directly to Virginia's public, four-year postsecondary institutions. In order to provide a benchmark for academic success or failure and persistence and attrition behavior, it was also necessary to compare Virginia GED diploma undergraduates to another group of nontraditional undergraduates who applied directly to public, four-year colleges and universities. The comparison group chosen was a national sample of nontraditional undergraduates who were first-time beginners enrolled in public, four-year colleges and universities across America.

CHAPTER III

METHODOLOGY

Introduction

For many GED examinees, continuing their education at an institution of higher education serves as an impetus for taking the GED. In 1999, nationally, 65% of GED examinees reported taking the test to further their education (GED Statistical Report, 2000) and in Virginia, 73% reported taking the test to continue their education. Questions concerning their academic performance and persistence and attrition behavior are necessary to determine whether GED diploma students who apply directly to public, four-year postsecondary institutions are able to complete degree programs. This study investigated success and nonsuccess of GED diploma students who applied directly to and enrolled in Virginia's public, four-year colleges and universities fall semester 1993 and fall semester 1994.

Research Questions

This study was designed to investigate the demographic profile, academic performance, and persistence and attrition behavior of GED diploma students enrolled in Virginia public, four-year institutions fall semester 1993 and fall semester 1994. A second part of the research entailed comparing Virginia GED undergraduates with a national sample of nontraditional undergraduates enrolled in public, four-year postsecondary institutions, fall semester 1989. This research was completed in three phases by determining the following:

Phase I – Assessments and Comparisons of Students' Profiles

- 1.1 What are the descriptive characteristics (age, gender, race, residency, receipt of financial aid, and enrollment status) of GED diploma students who applied directly to and enrolled

- in Virginia's public, four-year colleges or universities fall semester 1993 and fall semester 1994?
- 1.2 What are the descriptive characteristics (age, gender, race, residency, receipt of financial aid, and enrollment status) of a national sample of nontraditional students who applied directly to and enrolled in public, four-year colleges or universities across America, fall semester 1989?
 - 1.3 What is the average first-year GPA for Virginia GED undergraduates and a national sample of nontraditional undergraduates?
 - 1.4 What is the first-year attrition rate for Virginia GED undergraduates and a national sample of nontraditional undergraduates?
 - 1.5 What are the six-year persistence and attrition rates for Virginia GED undergraduates and five-year persistence and attrition rates for a national sample of nontraditional undergraduates?
 - 1.6 How do Virginia GED undergraduates compare to a national sample of nontraditional undergraduates?

Phase II – Comparisons by Gender

- 2.1 What differences exist between first-year GPA of Virginia GED male undergraduates and first-year GPA of Virginia GED female undergraduates?
- 2.2 What differences exist between first-year GPA of a national sample of nontraditional male and female undergraduates?
- 2.3 How do first-year GPAs of Virginia GED male and female undergraduates compare to a national sample of nontraditional male and female undergraduates?

- 2.4 What differences exist between the number of credit hours earned by Virginia GED male undergraduates and Virginia GED female undergraduates?
- 2.5 What is the relationship between gender and graduation for Virginia GED undergraduates?
- 2.6 What is the relationship between gender and graduation for a national sample of nontraditional undergraduates?
- 2.7 How do graduation and attrition rates of Virginia GED male and female undergraduates compare to graduation and attrition rates of a national sample of nontraditional male and female undergraduates?

Phase III – Analysis of Relations Between Demographic Factors and Student Performance

- 3.1 What is the relationship between demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) and first-year GPA for Virginia GED undergraduates?
- 3.2 What is the relationship between demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) and first-year attrition for Virginia GED undergraduates?
- 3.3 What is the relationship between demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) and graduation for Virginia GED undergraduates?

Sample

Two groups of students comprised the sample for this study. The first group was 108 GED diploma students who applied directly to Virginia's public, four-year colleges or universities fall semester 1993 and fall semester 1994. All subjects were admitted to and enrolled in a program of study. Of the 108 students, 10 graduated within six years of their initial enrollment. Forty-six students persisted to the second year and 62 students did not return fall semester for a second consecutive year to a Virginia public, four-year postsecondary institution.

The second group of students consisted of all nontraditional undergraduates who were first-time beginners enrolled in public, four-year colleges and universities across America, fall semester 1989. Nontraditional students were defined by the National Center for Education Statistics (NCES) as those students who possessed at least one of the seven risk factors – delayed enrollment into postsecondary education, being financially independent, having children, being a single parent, being a GED recipient, attending college part-time, or working full-time while enrolled in college (Berkner, Cuccaro-Alamin, & McCormick, 1996). The nontraditional students were drawn from data collected by the United States Department of Education on a nationally representative sample of all postsecondary students enrolled in institutions of higher education 1989-90. To obtain information on students' receipt of financial aid, educational expenses, and social and economic background, the U. S. Department of Education administered a survey to a stratified sample of students attending higher education institutions across America. The sample consisted of students of all ages, from different geographical regions, and different racial, social, and economic backgrounds enrolled in less than two-year, two- to three-year, and four-year doctoral and non-doctoral granting institutions of higher education.

Research Design

Phase I of this study employed descriptive research. Descriptive research is primarily concerned with “what is” (Gall, Borg, & Gall, 1996, p. 374) and involves reporting characteristics of a sample at one point in time. It was used in this study to describe the characteristics of Virginia GED diploma undergraduates and a national sample of nontraditional undergraduates. Characteristics included: age, gender, race, residency, receipt of financial aid, and enrollment status. A comparison analysis between the groups was included to determine similarities and differences of academic performance and persistence and attrition behavior between Virginia GED undergraduates and another group of nontraditional undergraduates.

In Phase II, t tests for independent sample means were used to determine if difference existed between Virginia GED male undergraduates and Virginia GED female undergraduates with respect to first-year GPA and the number of credit hours they earned. A chi square test was employed for question 2.4 to determine whether Virginia GED males and females differed with respect to graduation status. Chi square was suitable for this question, in that data were in the form of frequency counts occurring in “true categories”, for example, male vs. female (Gay, 1996). Within group comparisons on first-year GPAs and graduation rates were included for Virginia GED undergraduates and the national sample of nontraditional undergraduates. Between-group comparisons were included to determine academic success or failure and graduation success or nonsuccess of Virginia GED undergraduates.

In Phase III, stepwise multiple regression was used to determine whether variables were related and to what degree. Multiple regression was performed to analyze the relationship of demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status)

with the criterion, first-year GPA. Discriminant analysis was employed to determine could students who dropped out during their first year be classified by demographic factors such as age, gender, race, residency, receipt of financial aid, and enrollment status. Discriminant analysis was also used to determine could students who graduated be classified by demographic factors of age, gender, race, residency, receipt of financial aid, and enrollment status.

Variables

The operationalized variables used for GED diploma students enrolled in Virginia's public, four-year, postsecondary institutions are presented in Figure 1. A value is included for each variable.

Independent Variables

In Phase I, demographic information was used to present a profile of GED diploma students in Virginia's public, four-year postsecondary institutions and nontraditional students enrolled in public, four-year postsecondary institutions nationally. Phase II, gender served as the independent variable in addressing each research question. Gender has been noted as a factor in predicting students' completion or lack of completion. In Phase III, the independent variables were age, gender, race, residency, receipt of financial aid, and enrollment status.

Dependent Variables

In Phase II, the dependents or criteria variables were first-year GPA and the number of credit hours earned. These variables show completion or lack of completion of student participation. Similarly, Phase III used first-year GPA, first-year attrition status, and graduation status as criteria or dependent variables.

Figure 1. Operationalized Variables For Virginia GED Students

Attrition Framework	Variables	Values
Demographics	• Age	Age as of November 1 of year admitted to college
	• Gender	1 = Male 2 = Female
	• Race	2 = Black, Non-Hispanic 3 = American Indian, Alaskan 4 = Asian/Pacific Islander 5 = Hispanic 6 = White, Non-Hispanic
	• Residency	1 = Lives in institution-sponsored housing 2 = Does not live in institution-sponsored housing
	• Financial Aid	1 = Did not receive financial aid 2 = Received some kind of financial aid
	• Enrollment Status	1 = Part-time 2 = Full-time

Academic Performance	<ul style="list-style-type: none"> • Major Declared • Credit hours • First-year GPA 	<p>1 = Yes 2 = No</p> <p>Total number of credit hours completed during the first year enrolled</p> <p>Cumulative numeric value of grades earned</p>
Persistence	<ul style="list-style-type: none"> • Still enrolled after six years • Graduated 	<p>1 = Still enrolled after six years 2 = Not enrolled after six years</p> <p>Obtained a bachelor's degree within six years</p>
Attrition	<ul style="list-style-type: none"> • Left first-year • Left prior to graduation 	<p>1 = Did not attend fall semester of the 2nd year 2 = Attended fall semester of the second year</p> <p>Withdrew from the institution sometime after the second year</p>

Procedures

In the spring of 2001, I examined two sets of data. The first set of data, used to present a demographic profile and examine academic performance and persistence and attrition behavior of first-time enrolled, nontraditional undergraduates nationally, were derived from two sources of national archival information. Data obtained from the National Postsecondary Student Aid Study (NPSAS:90) consisted of information collected on a nationally representative sample of college students who attended higher education institutions across America. Information was obtained on students' receipt of financial aid, educational expenses, and social and economic background. NCES conducted enrollment trend analyses that relied on data collected by NPSAS:90 and published reports showing information about a nationally representative sample of all postsecondary students enrolled in higher education during the 1989 - 1990 school year.

Data from the second Beginning Postsecondary Students (BPS) Longitudinal study were also examined to determine persistence and attrition behavior of nontraditional undergraduates nationally. The second BPS study was conducted in the spring of 1994 as a five-year follow-up of NPSAS:90. The BPS study only included students enrolled in postsecondary education institutions for the first time in 1989-90. NCES performed persistence and attainment analysis to provide attainment rates for students completing associate degrees, vocational degrees, and bachelors' degrees within five years of their initial enrollment. Because the BPS study was longitudinal, it also provided information about the timing and nature of premature withdrawal for students who did not persist to attain degrees.

After studying reports published by NCES, I utilized NCES's Public Use Data Analysis System (DAS) software to examine the data collected in NPSAS 1989-90 and

BPS 90/94. Because DAS software shows data from NPSAS:90 and BPS 90/94 studies, users are able to specify variables, select particular groups of students to study, recreate or expand existent published tables, or generate new tables in their area of interest. For this study, in order to select a group of nontraditional undergraduates that could be compared to Virginia GED undergraduates, filters in the DAS software were used that selected students based on three criteria: (1) the student was beginning their postsecondary education, (2) the student possessed at least one of the seven risk factors, and (3) the student was enrolled in a bachelor's degree program in a public, four-year postsecondary institution, fall semester 1989. Data were obtained that demographically profiled nontraditional undergraduates and described their academic performance and persistence and attrition behaviors.

It is important to note that for this study, the filters used to select students who possessed all three criteria decreased the number of older (24 and older) nontraditional undergraduates. In the national sample of students surveyed (NPSAS:90), of all the students enrolled in public, four-year postsecondary institutions, 28% were 24 and older. As each filter was added to the data to create the comparison group, the percentage of students 24 and older decreased. For example, the combination of the filters, beginning postsecondary and possession of at least one risk factor, decreased the percentage of students 24 and older to 16%. After the last filter was added (enrolled in a BA degree program), the percentage of students who were 24 and older was 12%. Consequently, due to the filters needed to create a comparison group of nontraditional undergraduates, the percentage of students who were 24 and older enrolled in public, four-year postsecondary institutions nationally decreased from the initial 28% to the 12% found in the sample used in this study.

The second set of data examined was archival information on GED diploma students who applied directly to and enrolled in a program of study in Virginia's public, four-year postsecondary institutions fall semester 1993 and fall semester 1994. Annually, Virginia's State Council of Higher Education (SCHEV) collects admissions and enrollment data from institutions' registrars on all incoming postsecondary students enrolled in a four-year institution. All public, four-year institutions in Virginia report demographic information, program of study, grades earned, credit hours completed, first-year GPA, enrollment status, and first-year attrition on all admitted and enrolled students; they also note whether students receive financial aid. Information is stored in the Statistical Analysis System (SAS) format and annually edited for accuracy.

Using SAS software, a member of SCHEV researched the enrollment files for fall semester 1993 and fall semester 1994. All students were extracted who had been coded as GED for highschool diploma type and had no prior postsecondary experience. Information was gathered on age, gender, race, residency, receipt of financial aid, and enrollment status. Similarly, information was collected on first-year grade point averages (GPAs), first-year accumulated credit hours, first-year attrition, six-year degree completion and six-year attrition. All pertinent data for the sample of Virginia GED undergraduates were examined, entered into SPSS, and analyzed using appropriate statistical procedures.

Data Analysis

In Phase I, descriptive statistics was employed to describe students' demographic characteristics, academic performance, and persistence and attrition behavior. Descriptive information was used to profile Virginia GED undergraduates and the national sample of nontraditional undergraduates. First-year academic performance (GPAs and the average number

of credit hours earned) and persistence and attrition rates were analyzed for both groups of students. Percentage distributions for Virginia GED undergraduates were compared to percentage distributions for the national sample of nontraditional undergraduates.

In Phase II, a t test was used to determine if difference existed between first-year GPA of Virginia GED male undergraduates and Virginia GED female undergraduates. A t test was also used to determine if difference existed between the number of credit hours earned by Virginia GED male undergraduates and Virginia GED female undergraduates. A chi square analysis was performed to determine if Virginia GED male undergraduates and GED female undergraduates differed with respect to graduation status. First-year GPA and graduation rates were analyzed and within group comparisons were conducted for Virginia GED male and female undergraduates and the national sample of nontraditional male and female undergraduates. First-year GPA and graduation rates for Virginia GED male and female undergraduates were compared to first-year GPA and graduation rates for nontraditional male and female undergraduates nationally.

In Phase III, stepwise multiple regression analysis was performed to analyze the relationship of demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) with first-year GPA of Virginia GED undergraduates. Discriminant analysis was used to determine if demographic variables (age, gender, race, residency, receipt of financial aid, and enrollment status) could classify which Virginia GED undergraduates left their first-year and which GED undergraduates persisted to their second year. Utilizing discriminant analysis, demographic variables (age, gender, race, residency, receipt of financial aid, and enrollment status) were used to classify Virginia GED undergraduates who graduated or those who did not graduate.

Limitations of the Study

The results of this study are limited to GED diploma students with no prior postsecondary education participating in public, four-year colleges or universities. Data for Virginia GED diploma students came from archival data collected by Virginia's State Council of Higher Education (SCHEV). Due to the Family Educational Rights and Privacy Act of 1974, information obtained cannot be used to identify a particular student nor can attempts be made to contact any students. Data for the national sample of nontraditional undergraduates were archival and only available using DAS software.

CHAPTER IV

PRESENTATION OF DATA AND DATA ANALYSIS

Introduction

The purpose of this study was to analyze the demographic profile, academic performance, and persistence and attrition rates of Virginia GED diploma undergraduates enrolled in public, four-year postsecondary institutions and compare Virginia GED undergraduates to a national sample of nontraditional undergraduates enrolled in public, four-year postsecondary institutions. This chapter provides results of findings, results of within group comparisons, and results of comparisons between Virginia GED undergraduates and nontraditional undergraduates nationally.

This chapter is divided into three sections. The first section, to address questions posed in Phase I, presents demographic characteristics for Virginia GED undergraduates and a national sample of nontraditional undergraduates. Academic performance and persistence and attrition rates are described for each group and results are included for comparisons within the groups and between the groups.

The second section presents statistical findings to address gender comparison questions posed in Phase II. Percentage distributions are provided for the national sample of nontraditional undergraduates. Within group and between group comparisons are included for first-year GPA and graduation rates for Virginia GED undergraduates and a national sample of nontraditional undergraduates.

The third section presents statistical findings to address questions posed in Phase III for Virginia GED undergraduates. Analyses are included for demographic variables and relationship to first-year GPA, first-year attrition, and six-year graduation.

Analysis of Demographic Data

Phase I, Question 1.1: What are descriptive characteristics of GED diploma students who applied directly to and enrolled in Virginia's public, four-year colleges or universities fall semester 1993 and fall semester 1994?

Question 1.2: What are the descriptive characteristics of a national sample of nontraditional students who applied to and enrolled directly in public, four-year colleges and universities across America, fall semester 1989.

To address questions posed for Phase I, descriptive information is presented on Virginia GED undergraduates and the national sample of nontraditional undergraduates. Table 1 portrays demographic characteristics by age for Virginia GED undergraduates. The mean age for the GED undergraduates was 26 although, approximately 57% were between the ages of 17 and 23. A higher percentage of males attended than females, 56% and 44%, respectively. The majority of students were African-American (74%) and most students (80%) received some type of financial aid. Typically, nontraditional students attend higher education institutions part-time and work full time. In Virginia, however, an overwhelming number of GED undergraduates were enrolled full-time (83%).

Table 2 displays demographic characteristics by age for the national sample of nontraditional undergraduates. The mean age for nontraditional undergraduates nationally was 21 while 88% were 23 or younger. A slightly higher percentage of males attended than females, 51% and 49%, respectively. The majority of students were White, non-Hispanic (70%) and many students (91%) did not receive financial aid. The majority of students (60%) were enrolled exclusively full-time.

Table 1

Demographic Profile of First-time Enrolled GED Diploma Undergraduates in Virginia's Public, Four-year Postsecondary Institutions

AGE Mean 26.7 Median 22.5

	<u>Age as of 11/1 of year admitted to college</u>						
	Total	18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total	(%)	9.3	47.2	19.4	9.3	4.6	10.2
GENDER							
Male	(55)	13.3	48.3	18.3	8.3	5.0	6.7
Female	(44)	4.2	45.8	20.8	10.4	4.2	14.6
RACE / ETHNICITY							
Asian/Pacific Islander	(1)	100	0	0	0	0	0
Black, non-Hispanic	(74)	10.0	52.5	18.8	6.3	3.8	8.8
Hispanic	(3)	0	66.7	0	0	33.3	0
White, non-Hispanic	(22)	4.2	29.2	25.0	20.8	4.2	16.7
RESIDENCY							
Institutional-sponsored housing	(35)	5.6	39.5	23.7	18.4	2.6	10.5
Non-institutional housing	(59)	12.5	51.6	15.6	4.7	6.3	9.4
Unknown housing status	(6)	0	50.0	33.3	0	0	16.7
FINANCIAL AID							
Did not receive financial aid	(20)	13.6	50.0	13.6	9.1	0.0	13.6
Received some type of financial aid	(80)	8.1	46.5	20.9	9.3	5.3	9.3
ENROLLMENT STATUS							
Full-time Enrollment	(83)	8.9	50.0	22.2	6.7	3.3	8.9
Part-time Enrollment	(17)	11.1	33.3	5.6	22.2	11.1	16.7

N = 108

Table 2

Demographic Profile of First-time Enrolled Nontraditional¹ Undergraduates Nationally in Public, Four-year Postsecondary Institutions

AGE Mean 20.6

	Total	Age as of 12/31/89					40 or older (%)
		18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	
Total	(%)	48.0	39.7	5.1	2.2	3.3	1.7
GENDER							
Male	(51)	43.9	49.4	4.5	0	2.3	0
Female	(49)	52.3	29.6	5.8	4.5	4.4	3.5
RACE / ETHNICITY							
American Indian	--)	--	--	--	--	--	--
Asian/Pacific Islander	--)	--	--	--	--	--	--
Black, non-Hispanic	(10)	54.8	31.8	6.7	0	0	6.7
Hispanic	--)	--	--	--	--	--	--
White, non-Hispanic	(79)	49.3	38.2	5.3	2.3	3.6	1.3
RESIDENCY							
Campus housing	(39)	66.5	32.8	0	0	0	0.7
Off-campus	(23)	18.8	36.5	16.2	7.9	14.4	6.2
With parents	(38)	46.7	48.7	3.6	1.0	0	0
FINANCIAL AID							
Did not receive financial aid	(91)	46.2	41.1	5.1	2.4	3.3	1.9
Received some type of financial aid	(9)	65.3	25.9	5.5	0	3.3	0
ENROLLMENT STATUS							
Full-time enrollment	(60)	56.7	36.8	2.4	1.9	1.2	1.1
Mixed enrollment	(30)	36.1	48.1	7.4	3.6	3.8	1.0
Part-time enrollment	(10)	32.9	32.9	13.8	0	13.6	6.7

Source: NCES, NPSAS:90 Undergraduate Students 12/15/99

N = 115,400

-- Too few cases for reliable estimate

Note: Due to missing data, column total percentages may not equal to 100.

¹NCES defines nontraditional as possession of at least one of the seven risk factors -- delayed enrollment, being financially independent, having children, being a single parent, being a GED recipient, part-time attendance, or working full time while enrolled.

There are notable differences in the demographic characteristics of Virginia GED undergraduates and the national sample of nontraditional undergraduates. It was apparent that the majority of the Virginia GED undergraduates were Black, non-Hispanic students. They comprised 74% of the population in the sample versus only 22% for White, non-Hispanic students. Contrary to the national data, Black, non-Hispanic nontraditional students accounted for only 10% of the sample and White, non-Hispanic students comprised the majority (79%).

An examination of age and race showed that in Virginia, the majority of Black, non-Hispanic students (63%) were 23 and younger, but the majority of White, non-Hispanics students (67%) were 24 and older. Conversely, at the national level, the majority of Black, non-Hispanic students (87%) and the majority of White, non-Hispanic students (87%) were 23 or younger.

Examining age and gender showed similarities for the two groups, in that a higher percentage of younger males (23 and younger) than older males (24 and older) attended school. For example, in Virginia, GED male undergraduates 23 and younger comprised 62% of the male sample and nationally, nontraditional male undergraduates 23 and younger comprised 93% of the male sample. Statistics for females, however, showed differences. In Virginia, approximately the same number of younger GED female undergraduates were enrolled as older female undergraduates, 50% for each. Nationally, 82% were 23 and younger and only 18% of nontraditional females were 24 and older. Virginia obviously had higher a percentage of older, nontraditional female undergraduates. Further, the national data showed that a higher percentage of nontraditional female undergraduates (18%) attended public, four-year institutions than nontraditional male undergraduates (7%).

The group composition of Virginia GED undergraduates for this research was as follows: (1) the majority of GED undergraduates were Black, non-Hispanic and 19 to 29 years of age, (2) the highest percentage of all White, non-Hispanic students were 24 and older and (3), a higher percentage of females (24 and older) were enrolled than males 24 and older. The group composition of nontraditional undergraduates nationally was as follows: (1) the majority of nontraditional undergraduates were 23 or younger, (2) White, non-Hispanic males likely dominated the 19 to 23 year old age group, and (3) a slightly high percentage of Black, non-Hispanic females were 40 and older.

Another observation worthy of mentioning was the difference in receipt of financial aid and enrollment status for these two groups. Obviously in Virginia, the majority of GED undergraduates received some type of financial aid (80%) and a high percentage were enrolled full-time (83%). Further, of all GED undergraduates who received some type of financial aid, 55% were 23 and younger and of all GED undergraduates enrolled full-time, 59% were 23 and younger. Nationally, the majority of nontraditional undergraduates (91%) did not receive any type of financial aid, but over half of the them (60%) were enrolled exclusively full-time. Apparently for Virginia, undergraduates 23 and younger were most likely to enroll full-time and receive some type of financial aid. Further, in Virginia, it is likely that the high percentage of GED undergraduates enrolled full-time was directly related to the high percentage receiving some type of financial aid whereas nationally, receipt of some type of financial aid was not related to enrollment status.

Summary

These two groups differed with respect to age and race/ethnicity. They also differed regarding the percentage of students who received some type of financial aid during their first-year. Finding that the majority of Virginia GED undergraduates and nontraditional undergraduates nationally were enrolled full-time contradicted the findings in the literature. Most nontraditional students tend to enroll part-time in postsecondary institutions and because of personal obligations, work full-time. Last, the percentage of older (24 and older) nontraditional undergraduates enrolled in public, four-year postsecondary education institutions nationally was considerably lower than younger (23 and younger) nontraditional undergraduates, 88% and 12%, respectively.

Academic Profile and Performance

Phase I, Question 1.3: What is the average first-year GPA for Virginia GED undergraduates and a national sample of nontraditional undergraduates?

The majority of Virginia GED undergraduates (83%) declared a major. Findings presented in Table 3 show the average first-year GPA for Virginia GED undergraduates was 1.54. Of all the students who earned 2.0 or lower GPAs, students 23 and younger accounted for 68% of the population. Conversely, a higher percentage of older undergraduates earned higher GPAs. For example, 72% of all students who earned 3.0 to 3.49 were 24 and older. Similarly, students 24 and older accounted for all of the students who earned 3.5 or higher GPAs.

Examination of Table 3 also showed that of all the students who earned 16 to 21 credit hours during their first-year, 57% were 24 and older. Similarly, of all the students who earned 22 or more credit hours, 79% were 24 and older. These findings were consistent with the literature, in that older, nontraditional students tend to earn more credit hours and higher GPAs than their younger counterparts.

A salient finding in this research was the below C average GPA of Virginia GED undergraduates. In the literature reviewed, nontraditional students tend to average a 2.0 or higher GPA. Hence, a closer examination of the data was conducted because the average GPA was comparatively lower. Approximately 26% of the GED undergraduates (primarily 19 to 23 year olds) did not earn at least three credit hours and either had a GPA of less than 1.00 or no GPA. To determine the average GPA for Virginia GED undergraduates who earned at least three credit hours, students who did not earn at least three credit hours were removed from the data and the average GPA was recalculated (see Table 4).

Table 3

Average First-year Cumulative Hours and GPA for Virginia GED Undergraduates

	CREDIT HOURS	GPA		Age as of 11/1 of year admitted to college			
Mean	10.8	1.54					
Median	9.0	1.54					
Std. Deviation	9.2	1.18					
		18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total		9.3	47.2	19.4	9.3	4.6	10.2
Grade point average (cumulative)							
Less than 2.0		13.2	54.4	22.1	2.9	1.5	5.9
2.0 - 2.9		0.0	47.8	13.0	17.4	8.7	13.0
3.0 - 3.49		7.1	21.4	14.3	21.4	14.3	21.4
3.5 or higher		0.0	0.0	33.3	33.3	0.0	33.3
Number of credit hours (cumulative)							
5 or less hour(s)		15.8	52.6	15.8	5.3	0.0	10.5
6 - 11 hours		9.5	57.1	19.1	4.8	4.8	4.8
12 - 15 hours		7.1	57.1	35.7	0.0	0.0	0.0
16 - 21 hours		0.0	42.9	28.6	14.3	9.5	4.8
22 or more hours		7.1	14.9	0.0	28.6	14.3	35.7

N = 108

To determine an average GPA of Virginia GED undergraduates who earned at least three credit hours during their first-year, a filter technique in SPSS was used. Results showed that those GED undergraduates who earned at least three or more credit hours averaged a 2.06 GPA (see Table 4) and the median was 1.99. This finding indicated that those Virginia GED undergraduates who persisted through their first-year earned C-/C level grades. Moreover, 57% of all the students who earned 2.0 or lower GPAs were 23 and younger. This information supports the conclusion that Virginia GED undergraduates 23 and younger experienced difficulty academically during their first year.

Table 4

Average First-year GPA for Virginia GED Undergraduates Earning Three or More Credit Hours

	CREDIT HOURS	GPA
Mean	14.4	2.06
Median	13.0	1.99
Std. Deviation	7.9	.92

Age as of 11/1 of year admitted to college

	18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total	5.0	42.50	22.50	12.50	6.25	11.25
Grade point average (cumulative)						
Less than 2.0	7.5	50.00	30.00	5.00	1.25	2.50
2.0 - 2.9	0.0	47.80	13.00	17.40	8.70	13.00
3.0 - 3.49	0.0	23.10	15.40	23.10	15.40	23.10
3.5 or higher	25.0	0.0	25.00	25.00	0.0	25.00

N = 80

Table 5 presents the first-year GPA for the national sample of nontraditional undergraduates who earned at least three credit hours during their first year. Note, data for first-year credit hours nationally were not included, because the reported results were only for one semester.

Findings presented in Table 5 show that the average GPA for the national sample of nontraditional undergraduates who earned at least three credit hours during their first year was 2.5. Of those students earning 2.0 or lower GPAs, 92% were 23 and younger and only 8% were 24 and older. Moreover, as the GPA range increased, higher percentages of older nontraditional undergraduates earned higher grades. For example, of all of students who earned a 3.0 to 3.49 GPA, 13% were 24 and older but of all the students who earned a 3.5 or higher, 34% were 24 and older. A closer examination of the data, however, showed that of all students enrolled exclusively full-time, 6.5% were 24 and older whereas of all the students enrolled exclusively part-time, 35% were 24 and older (see Table 2). Consequently, it is conceivable that older, nontraditional undergraduates nationally enrolled for fewer credit hours subsequently earned higher grades.

Table 5

**Average First-year GPA for Nontraditional Undergraduates Earning Three or More Credit Hours
– Nationally**

Mean	GPA 2.50	Age as of 12/31/89					
		18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total		48.2	39.7	5.3	2.3	3.1	1.4
Grade point average (cumulative)							
Less than 2.0		50.2	42.1	5.5	0.0	2.2	0.0
2.0 - 2.9		48.8	41.9	5.1	1.1	1.9	2.0
3.0 - 3.49		53.2	33.9	4.5	3.5	2.9	1.9
3.5 or higher		23.6	42.1	12.1	10.4	11.8	0.0

Source: NCES, NPSAS:90 Undergraduate Students 12/15/99

N = 110,920

Note: The mean first-year GPA for the entire sample of nontraditional undergraduates was 2.41.

A comparison of the information contained in Tables 4 and 5 showed that the average first-year GPA for Virginia GED undergraduates who earned at least three credit hours was lower than the national sample of nontraditional undergraduates who earned at least three credit hours, 2.06 and 2.50, respectively. These findings indicated that Virginia GED undergraduates did not perform as well academically as nontraditional undergraduates nationally.

Another finding was that of all the students who earned 2.0 or lower GPAs, in Virginia, 58% were 23 and younger and at the national level, 92% were 23 and younger. This finding showed that in both groups, nontraditional students 23 and younger experienced academic difficulty in their first-year. In Virginia, however, of all the GED undergraduates who earned 2.0 or lower GPAs, only 7.5% were 18 or younger and 50% were age 19 to 23. Hence, the low GPAs of GED undergraduates age 19 to 23 impacted the academic results of the overall group.

Analyzing the academic achievement of older students in both groups also showed an interesting finding. As noted previously, a solid conclusion could not be drawn about the academic performance of older nontraditional undergraduates nationally. The enrollment pattern reflected that higher percentages of older nontraditional undergraduates were enrolled exclusively part-time (see Table 2) which may have been the reason why they earned higher GPAs (see Table 5).

In Virginia, however, older (24 and older) GED undergraduates earned higher GPAs and more credit hours than younger (23 and younger) GED undergraduates (see Tables 3 and 4). This finding indicated that older GED undergraduates took more credit hours and still earned higher GPAs. Consequently, for Virginia GED undergraduates, increasing age was a factor in achieving higher first-year GPAs. This finding supported findings in the literature that indicate a

relationship exist between age and academic achievement.

Because there was a notable difference in the percentage of older (24 and older) Virginia GED undergraduates who earned higher GPAs, it was decided to run a correlation between age and GPA, controlling for credit hours earned. With an alpha level of .05 (2-tailed), the result showed that age was significantly related to GPA for Virginia GED undergraduates (.25, d.f. 77, $p = .026$). The positive partial correlation coefficient indicated that as age increased, GPA also increased.

Summary

The first-year average GPA for Virginia GED undergraduates was lower than the first-year average GPA than nontraditional undergraduates nationally. The first-year average GPA for those Virginia GED undergraduates who earned at least three credit hours, that is completed one course, was approximately a C-/C. In Virginia, older GED undergraduates performed better academically than their younger counterparts, and there was a significant positive relationship between age and GPA.

Attrition and Persistence Profile

Phase I, Question 1.4: What is the first-year attrition rate for Virginia GED undergraduates and a national sample of nontraditional undergraduates?

Question 1.5: What are the six-year graduation and attrition rates for Virginia GED undergraduates and the five-year graduation and attrition rates for a national sample of nontraditional undergraduates?

To address questions posed about persistence and attrition, four tables were prepared. The first table, Table 6, showed that over half (57%) of Virginia GED undergraduates prematurely withdrew after their first year. Moreover, they did not re-enroll in their initial or in another Virginia public, four-year postsecondary institution the following fall semester. Interestingly, of all the students who left, 64% were 23 and younger. Further, 55% of all students who dropped out were 19 to 23 years old. Of all the students who persisted to fall of the 2nd year, almost 55% were 24 and older. These findings indicated that older GED undergraduates showed a higher persistence rate than their younger counterparts.

Table 6

First-year Attrition Rate for Virginia GED Undergraduates

	Total	<u>Age as of 11/1 of year admitted to college</u>					
		18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total	(%)	9.3	47.2	19.4	9.3	4.6	10.2
Left without ever returning	(57)	9.7	54.8	21.0	3.2	0.0	11.3
Persisted to fall of next year	(43)	8.7	37.0	17.4	17.4	10.9	8.7

N = 108

Table 7 presents information gathered on first-year attrition rates of nontraditional undergraduates nationally. Findings showed that only a small percentage (9%) of nontraditional undergraduates left higher education after their first-year. Notable though is that of all the students who left, 17% were 24 and older. Yet, of all the students who persisted to a second year, only 5% were 24 and older. Apparently, older nontraditional undergraduates nationally experienced difficulty in persisting to their 2nd year.

Table 7

First-year Attrition and Persistence Rates of Nontraditional Undergraduates – Nationally

	Total	<u>Age when began postsecondary education as of 12/31/89</u>					
		18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total	(%)	61.4	32.3	3.1	1.3	1.8	0.5
Left without ever returning	(9)	26.2	57.4	10.2	6.3	0.0	0.0
Stopped out to same level or lower level institution	(12)	50.8	42.0	4.6	0.0	2.7	0.0
Persisted to fall 90-91	(79)	67.0	28.0	2.0	0.9	2.0	0.2

Source: NCES, BPS:94 Beginning Postsecondary Students-Second Follow-up 12/31/99

Table 8, displays information on the six-year graduation and attrition rates of Virginia GED undergraduates. The findings in Table 8 were important, in that they showed only 9% of Virginia GED undergraduates graduated within six years. Further, 70% of GED undergraduates prematurely withdrew over the six-year period, and only 2% persisted over six years and were still enrolled in a Virginia public, four-year postsecondary institution.

Of all the students who attained a bachelor's degree, 80% were 24 and older when they began their postsecondary education. Specifically, GED undergraduates age 35 to 39 years old accounted for 40% of students who graduated. On the whole, older GED undergraduates earned more credit hours, earned higher GPAs, and were more likely to attain a bachelor's degree.

Table 8

Six-year Graduation and Attrition Rates for Virginia GED Undergraduates

	Total	Age as of 11/1 of year admitted to college					
		18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total	(%)	9.3	47.2	19.4	9.3	4.6	10.2
Attained bachelor's degree	(9)	0.0	20.0	10.0	20.0	40.0	10.0
Still enrolled towards bachelor's degree	(2)	50.0	0.0	0.0	0.0	0.0	50.0
No Bachelor's degree, no longer enrolled	(70)	9.2	52.6	22.4	7.9	1.3	6.6
Unknown Status	(19)	15.0	45.0	15.0	10.0	0.0	15.0

N = 108

Last, Table 9 presents information on the five-year graduation and attrition rates of nontraditional undergraduates nationally. The findings showed that 40% of nontraditional undergraduates attained a bachelor's degree. Of all the students who attained a bachelor's degree, 97% were 23 or younger when they began their postsecondary education and only 3% were 24 and older. This finding indicated that younger nontraditional undergraduates were more likely to earn a bachelor's degree. Further, 34% of nontraditional students prematurely withdrew over the five-year period. Of all the students who withdrew, 10% were 24 and older. This finding showed that at the national level, a higher percentage of older, nontraditional undergraduates prematurely withdrew than those who graduated.

Table 9

Five-year Graduation and Attrition Rates for Nontraditional Undergraduates – Nationally

	Total	Age when began postsecondary education as of 12/31/89					
		18 or younger (%)	19 - 23 (%)	24 - 29 (%)	30 - 34 (%)	35 - 39 (%)	40 or older (%)
Total	(%)	61.5	32.3	3.1	1.3	1.8	0.2
Attained bachelor's degree	(40)	72.2	24.5	1.9	0.4	0.6	0.4
Still enrolled towards bachelor's degree	(19)	59.0	34.6	3.1	0.9	2.4	0.0
No bachelor's degree, no longer enrolled	(34)	48.9	41.1	4.5	2.9	2.7	0.0
Changed degree working toward	(7)	65.9	28.7	2.5	0.0	2.8	0.0

Source: NCES, BPS:94 Beginning Postsecondary Students-Second Follow-up 12/31/99

Comparing and analyzing the information on graduation and attrition rates for the two groups showed three findings. First, in both samples, of all the students who left during their first-year in college, over half were age 19 to 23 – 55% in Virginia (see Table 6) and 57% nationally (see Table 7). This finding indicated that in both samples, nontraditional students age 19 to 23 experienced difficulty in persisting after their first year. In Virginia, this finding was supported by the fact that GED undergraduates, age 19 to 23, accounted for the highest percentage of students who earned 2.0 or lower GPAs and earned the least number of credit hours (see Table 3).

Also notable were the differences in persistence to the 2nd year for younger and older students. In Virginia, GED undergraduates 24 and older accounted for 55% of all the students who persisted. Nationally, nontraditional undergraduates 24 and older accounted for only 5% of all the students who persisted. Additionally, in Virginia, of all the students who persisted to the 2nd year, only a small percentage (9%) were age 18 or younger. Nationally, however, 67% of all the students who persisted to the 2nd year were 18 or younger. These findings were important, in that they indicated two points. First, older, Virginia GED undergraduates achieved higher success in first-year persistence than their younger GED counterparts and than older nontraditional undergraduates nationally. Second, 18 or younger nontraditional students nationally achieved more success persisting to the 2nd year than any other age group, nationally and in Virginia.

Last and noteworthy are the results for which students attained a bachelor's degree. In Virginia, GED undergraduates who were age 35 to 39 when they began their postsecondary education accounted for 40% of all the students who attained a bachelor's degree. No GED undergraduates who were 18 or younger when they began their postsecondary education attained

bachelor's degrees. Nationally, however, nontraditional undergraduates who were age 35 to 39 when they began their postsecondary education accounted for less than 1% of all the students who attained a bachelor's degree and undergraduates who were age 18 or younger when they began their postsecondary education accounted for 72% of undergraduates who attained a bachelor's degree. Consequently, these findings showed two results: (1) younger GED undergraduates in Virginia did not achieve success in earning a bachelor's degree and (2) older GED undergraduates achieved more success in attaining a bachelor's degree when compared to other Virginia GED undergraduates and older, nontraditional undergraduates nationally.

Summary

Virginia GED undergraduates had a higher first-year attrition rate and a lower graduation rate than nontraditional undergraduates nationally. Results also showed that Virginia GED undergraduates who were older (24 and older) when they began their postsecondary education persisted and earned a bachelor's degree at higher rates than their younger counterparts. Conversely, at the national level, younger nontraditional undergraduates (18 or younger) persisted and completed degrees at higher rates than their older counterparts.

Comparisons By Gender

Phase II, Question 2.1: What differences exist between first-year GPA of Virginia GED males and first-year GPA of Virginia GED females?

Question 2.2: What differences exist between first-year GPA of a national sample of nontraditional male and female undergraduates?

Question 2.3: How do the first-year GPAs of Virginia GED male and female undergraduates compare to a national sample of nontraditional male and female undergraduates?

Questions posed for Phase II were intended to measure differences between male and female academic performance and graduation rates. As noted in the discussion in the first section, the group of Virginia GED undergraduates who did not earn at least three credit hours inadvertently skewed the results for academic performance. These students, for whatever reasons, did not actually exhibit behaviors characteristic of students attempting to earn a bachelor's degree. Hence, it was decided that remaining analyses be conducted only on those Virginia GED undergraduates who earned three or more credit hours in their first-year. This was done by utilizing the filter technique available in SPSS. The result was a selection of 80 students (N = 80). Further, in order to maintain group consistency for comparison, nontraditional students nationally who did not earn at least three credit hours were also removed from the data. This was done by utilizing a filter in the DAS software.

Table 10 presents percentage distributions of first-year GPA for Virginia GED male and female undergraduates. A higher percentage of GED male undergraduates than GED female undergraduates earned 2.0 or lower GPAs, 56% and 43%, respectively. Moreover, 36% of females earned a 3.0 or higher GPA and only 10% of males earned a 3.0 or higher GPA. These findings were consistent with the literature, in that nontraditional females have been found to earn higher grades than their male counterparts.

Table 10

First-year GPA of Virginia Male and Female GED Undergraduates

		<u>Grade point average (cumulative)</u>			
		Less than 2.0 (%)	2.0 - 2.9 (%)	3.0 - 3.49 (%)	3.5 or higher (%)
Total	(%)	50.0	27.5	18.8	3.8
Gender					
Male		56.1	34.2	7.3	2.4
Female		43.6	20.5	30.8	5.1

N = 80

To address the question concerning differences in first-year GPA between males and females, a t test was performed to determine if male GED undergraduates and female GED undergraduates differed with respect to first-year GPA. Table 11 presents the results of the t test. With an alpha level of .05, a comparison of the means showed a significant difference between males and females' first-year GPAs ($t = -2.905$, $p = .005$). GED female undergraduates earned significantly higher first-year GPAs than their male counterparts.

Table 11

Results of t test Analysis of GPA for Virginia Male and Female GED Undergraduates

GENDER	N	<u>M</u>	<u>SD</u>
Male	41	1.78	.90
Female	39	2.35	.85

$t = -2.905$ $d.f. = 78$ $p = .005$

In analyzing the first-year GPA of nontraditional male and female undergraduates nationally, results showed the percentage of nontraditional female undergraduates who earned a 3.0 or higher GPA was slightly higher than the percentage of nontraditional male undergraduates who earned a 3.0 or higher GPA, 37% and 31%, respectively. However, the percentages of students who earned a 2.0 to 2.9 was similar. These findings indicated that little difference actually existed between academic performance of nontraditional male and female undergraduates nationally.

Table 12

First-year GPA of Nontraditional Male and Female Undergraduates – Nationally

GENDER	Mean GPA	<u>Grade point average (cumulative)</u>			
		Less than 2.0 (%)	2.0 - 2.9 (%)	3.0 - 3.49 (%)	3.5 or higher (%)
Male	2.35				
Female	2.49				
Total	(%)	26.9	39.4	19.4	14.2
Gender					
Male		29.2	39.8	17.4	13.6
Female		24.3	39.0	21.7	15.1

Source: NCES, NPSAS:90 Undergraduate Students 12/15/99

Comparing the results presented in Table 10 and 12 reiterated earlier findings. Overall, Virginia GED undergraduates did not perform as well academically as the national sample of nontraditional undergraduates. Fifty percent of Virginia GED male and female undergraduates earned 2.0 or lower GPAs and only 27% of nontraditional male and female undergraduates

nationally earned 2.0 or lower GPAs. Moreover, gender was not a factor. That is, compared to nontraditional undergraduates nationally, higher percentages of both male and female Virginia GED undergraduates earned 2.0 or lower GPAs. Interesting, however, were the differences in gender for 3.0 or higher GPAs. For example, 10% of Virginia GED male undergraduates earned 3.0 or higher GPAs whereas 31% of nontraditional males nationally earned 3.0 or higher GPAs. Conversely, approximately the same percentage of Virginia GED female undergraduates earned 3.0 or higher GPAs (36%) as did nontraditional female undergraduates nationally (37%). This finding indicated that Virginia GED male undergraduates did not earn grades as high as nontraditional male undergraduates nationally.

Phase II, Question 2.4: What differences exist between the number of credit hours earned by Virginia GED male undergraduates and the number of credit hours earned by Virginia GED female undergraduates?

A t test, with an alpha level of .05, was performed to determine if Virginia GED male and female undergraduates differed with respect to the number of credit hours they earned during the first-year. The findings displayed in Table 14 showed no significant difference between the number of credit hours accumulated by males and the number of credit hours accumulated by females.

Table 13

First-year Cumulative Credit Hours of Virginia GED Male and Female Undergraduates

		<u>Number of credit hours enrolled</u>				
		5 or less hours (%)	6 -11 hours (%)	12 - 15 hours (%)	16 - 21 hours (%)	22 or more hours (%)
Total	(%)	12.5	26.3	17.5	26.3	17.5
Gender						
Male		12.2	34.2	17.1	28.8	9.8
Female		12.8	17.9	17.9	25.6	25.6

N = 80

Table 14

Results of t test of First-year Cumulative Credit Hours for GED Male and Female Undergraduates

GENDER	N	<u>M</u>	<u>SD</u>
Male	41	12.95	6.65
Females	39	15.97	8.86

t = -1.719 d.f. = 78 p = .090

Phase II, Question 2.5: What is the relationship between gender and graduation for Virginia

GED male and female undergraduates?

Question 2.6: What is the relationship between gender and graduation for a national sample of

nontraditional male and female undergraduates?

Question 2.7: How do graduation and attrition rates of Virginia GED male and female

undergraduates compare to graduation and attrition rates of a national sample of nontraditional male and female undergraduates?

Cross tabulations tested with chi-square at an alpha level of .05 showed no significant association between gender and graduation for Virginia GED male and female undergraduates.

Table 15 shows the results of a chi-square test conducted on male and female GED undergraduates who earned at least three credit hours.

Table 15

Result of Chi Square Analysis of Virginia GED Male and Female Undergraduates
Graduation Rate

	Did not Graduate	Graduated	Row Total
Gender			
Males	38	3	41.0
Females	32	7	39.0
Total	70	10	80
d.f = 1	Chi-square = 2.066	p = .151 Not significant	

Table 16 shows the six-year graduation and attrition rates for Virginia GED male and female undergraduates. Seven percent of all the male GED undergraduates enrolled graduated whereas 18% of all the female GED undergraduates enrolled graduated. Findings showed that a high percentage of both male and female GED undergraduates prematurely withdrew without attaining a bachelor's degree, 73% and 71%, respectively. Further, no GED male undergraduates persisted over six-years.

Table 16

Six-year Graduation and Attrition Rates for Virginia GED Male and Female Undergraduates

		Attained bachelor's degree (%)	Still enrolled towards bachelor's degree (%)	No bachelor's, No longer enrolled (%)	No bachelor's, Unknown Status (%)
Total	(%)	12.5	1.3	72.5	13.8
Gender					
Male		7.3	0.0	73.2	19.5
Female		18.0	2.6	71.8	7.7

N = 80

Table 17 showed the five-year graduation and attrition rates for nontraditional male and female undergraduates nationally. Of all the male nontraditional undergraduates enrolled, 37% graduated. Almost the same percentage of males attained a bachelor's degree as did males who prematurely withdrew, 37% and 34%, respectively. Of all the female nontraditional undergraduates, 43% graduated. A higher percentage of females, however, attained a bachelor's degree than those who prematurely withdrew, 43% and 32%, respectively. Although the percentage difference was not overwhelmingly higher for nontraditional female undergraduates who graduated and those who did not graduate, it did show that nontraditional female students completed degree programs at higher rates within their own population. That is, instead of prematurely withdrawing, they were more likely to persist to graduation.

Table 17

Five-year Graduation and Attrition Rates of Nontraditional Male and Female Undergraduates -- Nationally

		<u>Persistence and attainment toward Bachelors</u>			
		Attained bachelor's degree (%)	Still enrolled towards bachelor's degree (%)	No bachelor's, No longer enrolled (%)	Changed degree working toward (%)
Total	(%)	40.0	18.3	33.4	8.3
Gender					
Male		37.1	22.6	34.2	6.1
Female		43.3	13.4	32.4	10.8

Source: NCES, BPS:94 Beginning Postsecondary Students-Second Follow-up 12/31/99

A comparison of the information portrayed in Tables 16 and 17 showed that nontraditional male undergraduates nationally performed better than Virginia GED male undergraduates. That is, 23% of nontraditional male undergraduates nationally persisted over five years and were still enrolled versus no GED male undergraduates in Virginia. This finding indicated that comparatively, Virginia GED male undergraduates experienced difficulty in persisting over time.

Interestingly, in the percentage of male and female undergraduates who prematurely withdrew without obtaining their degree, gender was not a factor for either Virginia GED undergraduates or nontraditional undergraduates nationally. In Virginia, 73% of males and 71% of females did not persist over time and nationally, 34% of males and 32% of females did not persist over time. The percentage rates of Virginia GED male and female undergraduates that prematurely withdrew were 50% higher than the percentage rates of nontraditional male and female undergraduates nationally. This finding indicated that comparatively, both male and female Virginia GED undergraduates experienced difficulty in persisting over time.

Analysis of Demographic Factors and Student Performance

Phase III: Question 3.1: What is the relationship between demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) and first-year GPA for Virginia GED undergraduates?

A (stepwise) multiple regression was performed to ascertain if any demographic factors could be used to predict achieved first-year GPA. The stepwise regression procedure included six variables: age, gender, race, residency, receipt of financial aid, and enrollment status. Table 18 displays the findings of the regression procedure.

Table 18

Multiple Regression of Demographic Factors on First-year GPA of Virginia GED Undergraduates

Independent Variable	Multiple R	R Squared	Beta	β	F	Significant F
Age	.398	.159	.030	.311	14.7	.002
Gender	.470	.221	.585	.319	10.9	.002
Receipt of Financial Aid	.561	.315	-.760	-.315	11.6	.002

$p < .05$

The R squared of the regression procedure showed that the three significant variables – age, gender, and receipt of financial aid accounted for 32% of the variance of first-year GPA. The demographic variable, age, was the strongest predictor of achieved first-year GPA and for each year increase in age, GPA slightly increased.

The results of the regression also showed that receipt of financial aid indicated a drop in first-year GPA. That is, those GED undergraduates who received some type of financial aid

earned lower GPAs than those undergraduates who had not received financial aid. This finding was anomalous and contradicted prior studies which have indicated that lack of financial aid can affect academic performance. No firm conclusion was drawn about the relationship between receipt of financial aid and first-year GPA for this group of Virginia GED undergraduates.

Phase III. Question 3.2: What is the relationship between demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) and first-year attrition for Virginia GED undergraduates?

To address question 3.2, discriminant analysis was performed to answer the following questions: (1) what differences, if any, existed among Virginia GED undergraduates who withdrew the first year and those who persisted to the second fall semester and (2) could individuals be correctly classified into either group. Demographic factors age, gender, race, residency, receipt of financial aid, and enrollment status were used to determine if differences existed among those GED undergraduates who left their first year and those who persisted to their second year.

Table 19 displays the results of discriminant functions between Virginia GED undergraduates who left during their first year and those who persisted to the second fall semester. The Wilks' lambda was significant $\Lambda = .82$, $X^2(6, N = 80) = 14.98$, $p = .020$ which meant that there were differences among the two groups across the demographic variables. Specifically, test results indicated that the demographic variable, receipt of financial aid, differentiated significantly among those GED undergraduates who left and those who persisted to the second fall semester. GED undergraduates who received some type of financial aid were classified as those students more likely to leave during their first year.

Table 19

Demographic Variables as Predictors of First-year Attrition for Virginia GED Undergraduates

	Correlation coefficients with discriminant functions	Standardized coefficients for discriminant functions
	Function 1	Function 1
Receipt Financial Aid	.727	.865
Enrollment Status	-.357	-.525
Ethnicity/Race	-.352	-.477
Gender	.114	.031
Age	.053	.214
Residency	-.048	-.026

Based on the coefficients, receipt of financial aid demonstrated the strongest relationship in predicting first-year attrition and accounted for 18% of the variance between the two groups. In attempting to predict first-year attrition, 69% of the individuals were classified correctly.

The result of the discriminant analysis indicated that Virginia GED undergraduates who received some type of financial aid were more likely to leave during their first year. This result was anomalous and contradicted prior studies which have indicated that financial difficulties is one of the primary reasons why nontraditional students drop out and receipt of some type of financial assistance is one of the factors that supports persistence. It was determined that the discriminating power of receipt of financial aid was probably spurious, and the reasons for the relationship could not be determined from the available data.

Phase III, Question 3.3: What is the relationship between demographic factors (age, gender, race, residency, receipt of financial aid, and enrollment status) and graduation for Virginia GED undergraduates?

To determine if demographic factors age, gender, race, residency, receipt of financial aid, and enrollment status could be used to predict group differences among Virginia GED undergraduates who graduated and those who prematurely withdrew, discriminant analysis was performed. Table 20 shows the results. The overall Wilks' lambda was not significant $\Lambda = .91$, $X^2(6, N = 80) = 7.374$, $p = .288$ which meant that there were no significant differences across the demographic variables that differentiated graduates and nongraduates.

Table 20

Demographic Variables as Predictors of Six-year Graduation for Virginia GED Undergraduates

	Correlation coefficients with discriminant functions	Standardized coefficients for discriminant functions
	Function 1	Function 1
Age	.715	.768
Gender	.365	.506
Enrollment Status	-.341	-.285
Received Financial Aid	.233	.335
Residency	-.212	-.422
Ethnicity / Race	.171	.007

It is important to note that although 84% of the cases were classified correctly, none of the 10 GED students who graduated were classified correctly. That is, the discriminant analysis misclassified their group membership and predicted that the 10 graduates would be members of the group of students who did not graduate. This kind of misclassification indicates that group differences between graduates and nongraduates were not strong.

Chapter Summary

The findings in this chapter showed interesting information about GED undergraduates who enrolled directly in Virginia's public, four-year postsecondary institutions. First, analysis of demographic characteristics showed that Virginia GED undergraduates were similar to the national sample of nontraditional undergraduates. For both groups, male students outnumbered female students, and the majority of students lived off-campus or in non-institutional housing. Further, the majority of students in both groups enrolled full-time.

Differences were also found between Virginia GED undergraduates and the national sample of nontraditional undergraduates. First, the majority of Virginia GED undergraduates were Black, non-Hispanic students. Nationally, the majority of nontraditional undergraduates were White, non-Hispanic students. The finding for Virginia was interesting because the literature reviewed on Virginia GED test takers indicated that over half of the students who take the GED are White, non-Hispanic adults. Obviously, more Black, non-Hispanic GED diploma students chose to enroll directly in Virginia's public, four-year postsecondary institutions.

Second, differences existed in the number of students who received some type of financial aid. The majority (80%) of Virginia GED undergraduates received some type of financial aid whereas less than 10% of nontraditional undergraduates nationally received some type of financial aid. Virginia, however, is considered a "high-tuition, high-aid" state. That is, although tuition fees are comparatively higher than other public, higher education institutions in the United States, most students are able to receive some type of financial aid.

Differences also existed in the academic performance of Virginia GED undergraduates and the national sample of nontraditional undergraduates. The first-year average GPA for Virginia

GED diploma students was 1.54. The average GPA for the national sample of nontraditional undergraduates was 2.41. Virginia GED undergraduates did not perform as well academically as nontraditional undergraduates nationally. A closer examination of the data for Virginia GED undergraduates also showed that 26% of Virginia GED students (primarily students age 19 to 23) did not earn at least three credit hours their first-year and either had a GPA less than 1.00 or no GPA. The average GPA was recalculated to determine the average GPA for those students who earned at least three credit hours. The average GPA was 2.06 and the median GPA was 1.99. The average GPA was still lower than the 2.5 average GPA earned by students in the national sample of nontraditional undergraduates who earned at least three credit hours their first year. The results, however, indicated that Virginia GED undergraduates who earned at least three credit hours earned at least C-/C level grades in their first year.

Additionally, Virginia GED undergraduates 24 and older earned higher grades and accumulated more credit hours than GED undergraduates 23 and younger. This finding showed that older GED undergraduates (24 and older) performed better academically than younger GED undergraduates (23 and younger). The result of a correlation test used to determine if age and academic achievement were related indicated that a significant relationship existed between age and academic achievement.

Results of academic performance and graduation and attrition rates also showed that Virginia GED undergraduates, age 19 to 23, experienced difficulty in attending and persisting in Virginia's public, four-year postsecondary institutions. They accounted for 68% of all the students who earned 2.0 or lower GPAs. They accounted for 55% of all the students who dropped out during their first-year and accounted for 53% of all the students who did not earn a

bachelor's degree and were no longer enrolled after six years.

In determining which students actually graduated, there was no statistical significance difference between the number of Virginia GED male undergraduates who graduated and the number of GED female undergraduates who graduated. It was found that the majority of Virginia GED undergraduates who attained a bachelor's degree were older GED undergraduates, that is those GED undergraduates who were 24 and older when they began their postsecondary education. In the national sample of nontraditional undergraduates, however, the majority of students who attained a bachelor's degree were 18 or younger when they began their postsecondary education. These findings indicated that older, Virginia GED undergraduates can be expected to complete a degree program and earn a bachelor's degree.

Overall, Virginia GED undergraduates did not perform as well the national sample of nontraditional undergraduates. They earned, on average, a lower first-year GPA, dropped out at higher rates during their first year, persisted over time at lower rates, and graduated at lower rates than nontraditional undergraduates nationally.

Finally, results of the regression analysis indicated that those Virginia GED undergraduates who did not receive financial aid earned higher grades than those GED undergraduates who received some type of financial aid. No substantial conclusion, however, was drawn about the relationship between receipt of financial aid and first-year GPA. Results of the discriminant analysis indicated that receipt of financial aid could be used to classify Virginia GED undergraduates who dropped out during their first-year and those GED undergraduates who persisted to their second year. This finding was anomalous and no substantial conclusion could be drawn about receipt of financial aid and first-year attrition for Virginia GED undergraduates.

CHAPTER V
SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

For over two decades, record numbers of nontraditional students have flocked to postsecondary institutions to gain more education and fulfill their educational goals (Bean and Metzner, 1985; Vilella & Hu, 1991). Their presence in higher education has changed the profile of what is described as a traditional or typical undergraduate student. Representing a sector of the nontraditional student population is a group of students who for one reason or another did not complete a traditional high school diploma. Many of these students pursued and obtained the GED diploma not only to complete their secondary education, but to also pursue postsecondary education (Baldwin, 1991; Boesel, 1998; Mollison, 2000).

Since the 1980s, administrators, counselors, and instructors have posed questions concerning how well GED diploma students perform in higher education (McElroy, 1990). These questions arise primarily, because GED diploma students do not complete traditional high school and typically lack the academic foundation gained by students who attended and graduated from four-year secondary schools. As with other nontraditional students, GED diploma students also possess characteristics that are different from traditional college students. Some of those characteristics are delayed enrollment, working full-time and attending school part-time, being financially independent, and having family responsibilities and obligations. These characteristics have also been labeled as risk factors, because they can encourage attrition and increase the chances of students not completing their higher education programs (Bean and Metzner, 1985; Berkner, Cuccaro-Alamin, & McCormick, 1996; Rose, 1997).

Traditionally, GED diploma students attend two-year colleges or attend two-year colleges with aspirations of transferring to four-year, postsecondary institutions (McElroy, 1990; Strosnider, 1997). Several studies have been conducted to examine the academic performance, persistence to degree completion, and attrition behavior of GED diploma graduates enrolled in two-year institutions (Beltzer, 1985; Hamilton, 1998; Klein & Grise, 1988; Soltz, 1996). Conclusions have been mixed regarding GED students' success and nonsuccess. Some GED diploma students also apply directly to four-year postsecondary institutions (Strosnider, 1997). Conclusions have also been mixed for studies conducted on GED diploma students enrolled in four-year institutions (Colert, 1984; Owens, 1989; Quinn, 1986; Swarm, 1981). No studies were found on the academic performance, persistence to degree completion, or attrition behavior of GED diploma students enrolled in Virginia's higher education system. Hence, this study was conducted to examine the demographic profile, academic performance, and persistence and attrition behavior of GED diploma undergraduates who enrolled directly in Virginia's public, four-year postsecondary institutions.

Conclusions and Discussion of Major Findings

The major findings in this study resulted from questions posed to examine the academic success or nonsuccess of a sample of GED diploma undergraduates enrolled in Virginia's public, four-year postsecondary institutions. Major findings also resulted from comparisons between GED diploma undergraduates and a national sample of nontraditional undergraduates who enrolled in public, four-year colleges and universities across America.

Phase I – Demographic Profile

1. The age of college students is one of the primary characteristics used to define nontraditional students. Examination of age showed differences between Virginia GED undergraduates and the national sample of nontraditional undergraduates. In Virginia, the average age was 26. This finding was consistent with the average age found in other studies on GED diploma students in higher education (Colert, 1984; Sharon, 1972a). Nationally, the average age was 20. This finding was unexpected because nontraditional students in higher education are typically 23 and older (Loudermilk, 1995).

2. Regarding race/ethnicity, the majority of Virginia GED undergraduates were Black, non-Hispanic students. This finding was different from prior research in which the majority of nontraditional college students (GED diploma students) were White, non-Hispanic students (Hamilton, 1998; Hunter, 1992). The finding for Virginia was unexpected, because average enrollment patterns for GED diploma students showed that more White, non-Hispanic students reportedly take the GED than members of other racial backgrounds (Baldwin, 1991; 1998 Virginia GED Statistical Report, 1999). Seemingly, more White, non-Hispanic GED diploma students would have comprised the sample. Consequently, it can be expected that more Black, non-Hispanic GED diploma students will enroll directly in Virginia's public, four-year postsecondary institutions than GED diploma students of other racial/ethnic backgrounds.

3. Enrollment status for both samples of students was another major finding. In Virginia, as in the national sample, the majority of students enrolled full-time. In one of her studies, Swarm (1981) also found that the majority of GED diploma students enrolled full-time. In other research, however, it is noted that most nontraditional students tend to enroll in college part-time

(Bean and Metzner, 1985; Berkner, Cuccaro-Alamin, & McCormick, 1996; Swarm, 1981). Thus, the finding for enrollment status also contradicted enrollment patterns noted for nontraditional students. Further, Bean and Metzner (1987) ascertained that 'enrollment status' is the third best predictor of nontraditional student attrition, and students who attend college part-time tend to prematurely withdraw and not obtain a degree. Although the majority of Virginia GED diploma students enrolled full-time, over 50% still left during their first year. This finding contradicts Bean and Metzner's finding and leaves questions as to what role 'enrollment status' actually plays in nontraditional student attrition.

Academic Profile

1. As a whole, this sample of Virginia GED undergraduates did not perform well academically. The average first-year GPA for Virginia GED undergraduates was 1.54. This result was comparatively lower than the average GPA (2.41) found for the national sample of nontraditional undergraduates. The average GPA for Virginia GED undergraduates was also lower than the average GPA for GED undergraduates noted in the literature (Boesel, Alsalam, & Smith, 1998; Rinecones, 1982; Swarm, 1981). Moreover, Virginia GED undergraduates 19 to 23 years old accounted for over 50% of the GED students who earned a 2.0 or lower GPA. They also accounted for over half of the students who earned 15 hours or less during their first-year. Consequently, Virginia GED undergraduates, 19 to 23 years of age, can be expected to experience difficulty in adjusting to the rigor of academics in public, four-year postsecondary education.

2. Because the average GPA for Virginia GED undergraduates was lower than average GPA found in previous research, a further examination of the data was conducted which resulted

in another major finding. Although the majority of Virginia GED undergraduates enrolled full-time, approximately 26% earned fewer than three credit hours during their first-year which resulted in a GPA of 1.00 or lower or no GPA. These students were primarily 19 to 23 years of age.

In order to ascertain an average GPA for GED undergraduates who earned at least three credit hours, that is completed at least one course, a second analysis was conducted, and results showed an average GPA of 2.06 and a median GPA of 1.99. This finding lead to the conclusion that the majority of Virginia GED undergraduates who earn three or more credit hours in their first year can essentially earn satisfactory grades and are likely to persist to their second year.

The average GPA for Virginia GED undergraduates who earned at least three credit hours remained lower than the average GPA found for the national sample of nontraditional undergraduates who earned at least three credit hours. Comparatively, Virginia GED undergraduates who earned at least three credit hours in their first year did not perform as well academically as other nontraditional undergraduates who earned at least three credit hours in their first year.

3. Another major finding was the difference in GPA earned by younger (23 and younger) GED undergraduates and older (24 and older) GED undergraduates. On average, older GED undergraduates earned higher grades than younger GED undergraduates. Results of a correlation test supported this finding, in that academic achievement was significantly related to age. In the literature reviewed, Colert (1984) and Owens (1989) also found that older GED undergraduates performed academically better than their younger counterparts. Hence, results for Virginia GED undergraduates were consistent with the literature, and older GED undergraduates are more likely

to earn higher grades than younger GED undergraduates.

Attrition and Persistence

1. First-year attrition was a problem for Virginia GED undergraduates. Fifty-seven percent dropped out during their first-year. Although the attrition rate for Virginia GED undergraduates was lower than the attrition rate reported by Quinn (1986), it was considerably higher than the nine percent found for the national sample of nontraditional undergraduates. The first-year attrition rate for Virginia GED undergraduates also contradicted results reported by Sharon (1972a) and Rinecones (1982) in which fewer than 30% of GED diploma undergraduates dropped out during their first-year.

Examination of the data also showed that of the 57% of students who dropped out during their first year, almost half (26%) accumulated fewer than three credit hours. The lack of accumulated hours per semester has been noted as a factor significantly related to attrition (Metzner and Bean, 1987). Christensen (1990) also found that the more credits earned per semester, the more likely nontraditional students persisted. Consequently, Virginia GED undergraduates who do not complete at least one three credit hour course in their first year are more likely to drop out.

Results also indicated that almost 50% of all the students who dropped out their first year were 19 to 23 years old. This finding, coupled with the finding for first-year average GPA and number of credit hours accumulated, confirmed that Virginia GED diploma students, 19 to 23 years of age, who enroll directly in public, four-year postsecondary institutions are likely to experience academic difficulty and dropout during their first-year.

2. Examination of six-year attrition rate showed that after six years, 70% of Virginia GED undergraduates did not attain a bachelor's degree and were no longer enrolled in a Virginia public, four-year postsecondary institution. This finding was essentially the same as reported by Quinn (1986). Comparatively, the attrition rate for Virginia GED undergraduates was higher than the five-year attrition rate (34%) found for the national sample of nontraditional undergraduates. These findings lead to the conclusion that GED undergraduates are likely to experience persistence problems over time.

3. Regarding the six-year graduation rate, nine percent of Virginia GED undergraduates attained a bachelor's degree within six years of their initial enrollment. Although the graduation percentage was higher than the percentage reported by Quinn (1986) and Owens (1989), it was lower than the 40% of nontraditional undergraduates in the national sample who attained a bachelor's degree. Because fewer than 10% of Virginia GED diploma undergraduates earned a bachelor's degree within six years and 70% prematurely withdrew and did not attain a bachelor's degree from a public, four-year institution in Virginia, it is plausible to state that the majority of Virginia GED undergraduates are not likely to experience success in attaining a bachelor's degree when they enroll directly in public, four-year postsecondary institutions.

The majority of Virginia GED undergraduates who graduated were females, 35 to 39 years of age when they began their postsecondary education. Sultan (1989) found that older, female GED undergraduates were more likely to attain a bachelor's degree. Christensen (1990) also found that older, nontraditional female undergraduates were more likely to persist to attain their degree. Results for the national sample of nontraditional undergraduates also showed that a slightly higher percentage of nontraditional females graduated than nontraditional males, however

the majority of females were 18 or younger when they began their postsecondary education. The vast difference in age found in this research for nontraditional female undergraduates who graduate indicates that nontraditional female undergraduates, 18 or younger or 35 to 39 years of age, should be expected to persist to degree completion and attain a bachelor's degree.

4. The last major finding for Phase I was specific to Virginia. It was discovered in attempting to track these GED undergraduates that data reported for long term persistence for Virginia undergraduates is not reliable and tenuous at best. Tracking students over a six-year period is virtually impossible. The 70% of students who did not attain a bachelor's degree and were no longer enrolled in a public, four-year postsecondary institution in Virginia and the other 19% whose status was unknown could have transferred to a community college or enrolled in a private two- or four-year postsecondary institution. Thus, they could have attained a degree at another institution and at later time. The lack of data for enrollment over time led to the conclusion that systems should be in place that can examine and analyze students' education endeavors.

Phase II – Comparisons by Gender

1. The results of a t test of independent sample means indicated that Virginia GED female undergraduates significantly earned higher first-year GPAs than Virginia GED male undergraduates. Colert (1984) and Sultan (1989) also found that female GED diploma undergraduates earn higher GPAs than their male counterparts. Female GED undergraduates did not significantly differ from male GED undergraduates in the number of first-year credit hours accumulated or in graduation rate. These findings lead to the conclusion that although Virginia GED female undergraduates are likely to earn higher first-year grades, Virginia GED male

undergraduates can take and complete as many as courses as Virginia GED female undergraduates.

2. There was no significant difference in the number of female GED undergraduates who graduated and the number of male GED undergraduates who graduated. In the national sample of nontraditional undergraduates, males and females tended to graduate at about the same percentage. These findings contradicted findings in the literature, in that nontraditional female undergraduates tend to graduate more than nontraditional male undergraduates (Horn and Carroll, 1996; Christensen 1990). More research is needed to determine if gender is a factor for which nontraditional undergraduates (GED diploma undergraduates) graduate and which do not graduate.

Phase III – Demographic Factors and Student Performance

1. Results of the stepwise multiple regression analysis indicated that three demographic variables, age, gender, and receipt of financial aid, were statistically significant for predicting first-year academic performance. Although no studies in the literature reviewed noted demographic factors as predictors of first-year GPA, Colert (1984), Owens, (1989), and Sultan (1989) reported that older, female GED undergraduates performed better than younger GED undergraduates.

The statistically significant relationship between receipt of financial aid and first-year GPA indicated that Virginia GED undergraduates who did not receive financial aid during their first-year earned higher first-year GPAs than Virginia GED undergraduates who received some type of financial aid, and receipt of some type of financial aid during the first-year enrolled did not guarantee that Virginia GED undergraduates would perform better academically. The result of the regression analysis for receipt of financial aid, however, was not conclusive. A closer

examination of the data showed that the 20% of people who did not receive financial aid accumulated fewer than 15 credit hours. That is, for their first year, they completed only four to five courses which is indicative of part-time enrollment. It is conceivable that these students did not need financial assistance and were able to afford to pay for their classes out-of-pocket. It is also conceivable that because they took only two to three courses per semester, they earned higher grades. More research is needed to ascertain what other factors may exist that explain the relationship of receipt of financial aid and academic performance for GED diploma undergraduates.

The finding for the receipt of financial aid variable also contradicted the literature. Bean and Metzner (1985) and Sharon (1972a) noted that lack of financial support or financial difficulty is a concern for nontraditional undergraduates (GED diploma undergraduates). Rose (1997) found through interviews with GED diploma undergraduates that lack of financial assistance can affect academic performance. Consequently, the data in this study do not provide adequate or supportive evidence to conclude that receipt of financial aid negatively impacts academic performance for Virginia GED undergraduates.

2. The receipt of financial aid variable was the only demographic variable statistically significant in classifying first-year attrition by Virginia GED undergraduates. The results indicated that Virginia GED undergraduates who received some type of financial aid were more likely to drop out during their first-year than Virginia GED undergraduates who did not receive financial aid. This finding contradicted the literature. Christensen (1990) found that receipt of financial aid was significantly related to persistence, was an economic necessity for persisters, and more students who received financial aid persisted. Rose (1997) also found that some type financial aid

encouraged persistence and more important, determined whether GED diploma students were able to enroll in college. Consequently, the finding in this study was anomalous. Virginia GED undergraduates who dropped out possibly had alternative reasons not included in this analysis, and the reasons for the relationship between receipt of financial aid and first-year attrition could not be determined from the available data.

3. Results of the discriminant analysis indicated that none of the demographic variables (age, gender, race, residency, receipt of financial aid, and enrollment status) could be used to classify Virginia GED graduates and nongraduates. The discriminant analysis, however, misclassified the graduates which indicated that demographically as a group, those Virginia GED undergraduates who graduated were similar to those Virginia GED undergraduates who did not graduate.

This study demonstrated that overall, Virginia GED diploma students who enrolled directly in Virginia's public, four-year postsecondary institutions fall semester 1993 and fall semester 1994, experienced academic difficulty in their first-year. Specifically, GED diploma students 19 to 23 years of age comprised half of all the students who earned a 2.0 or lower GPA and over half of all the students who dropped out during their first-year. Conversely, older GED undergraduates earned higher first-year GPAs and accumulated more credit hours. Those GED diploma students who earned at least three credit hours in their first-year had a better chance of remaining in school and achieving satisfactory grades. Compared to the national sample of nontraditional undergraduates, Virginia GED undergraduates did not perform as well academically and dropped out in higher percentages. Finally, fewer than 10% of Virginia GED undergraduates earned a bachelor's degree which indicated that the majority of Virginia GED

undergraduates prematurely withdrew prior to completing degree requirements and are not likely to be successful in attaining a bachelor's degree when they enroll directly in Virginia's public, four-year postsecondary education institutions.

Implications for Practice

This research was conducted to contribute to the literature needed to inform educators about the academic performance of nontraditional students, specifically, GED diploma students who enroll directly in Virginia's public, four-year postsecondary education institutions. This research was also conducted to improve policies and practices involving nontraditional (GED) students in higher education.

Initial experiences of first-year college students are important because during the first year, positive and negative situations encountered shape students' ideas and expectations about postsecondary education. As a group, Virginia GED undergraduates experienced academic difficulty in their first year and over half dropped out. These findings indicated that GED diploma students who applied directly to Virginia's public, four-year postsecondary institutions were not prepared for the rigor of four-year academia. As a result, admission policies that create effective programs are needed to address some of the issues that may be underlining reasons for students' unpreparedness.

First, admissions directors and academic counselors at the institution, in conjunction with directors of community-based adult education programs, should develop pre-enrollment programs. These programs should be directed toward preparing GED undergraduates for collegiate life in order to promote first-year success. For example, tours of the campus to acclimate students with campus facilities could help students feel more comfortable with the

college/university environment and assist in their adjustment to the campus and its facilities.

Visits with faculty to discuss curriculum and course requirements could inform students of what should be expected academically and give them an idea of the demands of coursework. Sitting in on class sessions would give potential GED diploma undergraduates experiential experiences of what occurs in the classroom. Follow-up counseling sessions with academic counselors and undergraduates already enrolled in disciplines sought by GED undergraduates would also be beneficial. Discussions about college life could inform potential GED undergraduates about the demands, responsibilities, and rigor students face in attempting to earn a bachelor's degree. Last, programs could be established that create networks of GED diploma students who have successfully completed college courses at four-year postsecondary institutions. These students could return to adult education programs in the community and serve as volunteer role models to inform other GED diploma students considering postsecondary education about their experiences, and what changes and adjustments they found were necessary to complete college courses. Because initial impressions of and experiences at the institution can impact academic performance and attrition decisions, it is essential that potential GED diploma undergraduates understand the reality of the intensity and challenges of four-year postsecondary education prior to enrollment.

Second, academic counselors coupled with directors of community-based adult education programs could also establish programs that provide comprehensive intervention services. Intervention services could be rendered on and off-campus. During students' first year, academic or departmental advisors should be required to schedule monthly meetings with GED undergraduates to discuss issues or problems and develop solutions to address barriers or problems hindering continuation. Students would be required to proactively plan steps that would

facilitate their continuance in school. GED undergraduates could also be required to take seminars that teach study habits and time management techniques. These seminars could help GED diploma undergraduates who experience problems academically or find difficulty in balancing their responsibilities. The institution could also work in conjunction with adult education programs in the community to provide free-tutoring, one-on-one counseling, support meetings, child care services, and telephone support hot lines. Interventions such as these could help GED undergraduates cope with challenges, handle mental stress, make adjustments in their demanding and often conflicting schedules, and continue their education.

Persistence over time was also a problem for this sample of Virginia GED undergraduates. Findings in this research, however, demonstrate that GED diploma students who actually complete courses for credit during their first-year have a better chance of remaining in school and achieving acceptable grades. Hence, to improve persistence over time, academic counselors should be required to meet with GED undergraduates prior to their enrollment and during their first year to explicitly explain the importance of accumulating credit hours. Advisors should inform students about alternative methods for taking courses and completing degree requirements. For example, adult continuing education courses offered off-campus, summer courses, courses offered at local community colleges and possibly other local colleges, and courses via the internet and distance learning programs are all venues that could help GED undergraduates to complete more courses in a timely fashion and thus, encourage degree completion.

Another implication of this research relates to the recognition of age as a factor in academic performance and degree completion. Differences in life style and responsibilities result in different demands upon students. As indicated in this study, young GED diploma students (23

or younger) have issues that interfere with their ability to successfully complete courses and persist to their second year. After more research is conducted to ascertain what issues exist for younger GED undergraduates, admission directors should develop policies that mandate GED diploma students (23 or younger) participate in counseling sessions specifically designed to address their problems. For example, prior to admission and during first-year enrollment, academic counselors and department advisors should meet with younger GED undergraduates, establish support groups, and discuss services needed to assist them in their transition into higher education. Programs offered on campus and in the local community should provide information on topics such as, making and fulfilling commitments, balancing responsibilities, steps to fulfilling personal goals, using community and campus resources, and working while attending school. In educating younger GED undergraduates about factors that could assist in persistence, colleges and universities may be able to address the issues that cause their premature withdrawal from four-year, postsecondary institutions.

A final implication of this research relates to availability of data. It can be difficult to track students throughout their postsecondary education. When databases are not in place, following a student is virtually impossible. Institutions, locally and at the state level, should seek to implement systems and practices that track students. It was very surprising to find that data bases have not been established that allow education state departments to cross reference students records. A system that allows cross referencing would encourage and permit research that examines students' education endeavors over time.

Recommendations for Future Research

It is important that members of higher education understand that the number of GED diploma undergraduates who directly enroll in public, four-year postsecondary education institutions will continue to increase. More information is needed about the academic performance and attrition and persistence behavior of GED diploma undergraduates. Several follow-ups to this study would be helpful to obtain that information.

1. Because nontraditional students tend to be different from one another and different from traditional high school students, studies examining and comparing groups of nontraditional undergraduates are needed. As found in this study, one group of nontraditional college students can be different demographically from another group. Acknowledging the differences and comparing groups to one another is needed to more accurately analyze the academic performance and persistence and attrition behavior of nontraditional college students.

2. Conducting research on larger populations of GED diploma students enrolled in four-year postsecondary education institutions could also be helpful. Results from larger samples would assist in generalizability to GED diploma undergraduates.

3. Research that examines specific age groups is also needed to determine what environmental factors exist that impact academic performance and more important, persistence and attrition. Studies specific to young GED undergraduates (23 or younger) would be helpful in order to obtain information that may help in preventing their attrition.

5. More research that involves interviews with GED undergraduates is necessary, because students who have been successful or unsuccessful, can inform those who work with GED diploma students of factors, situations, and barriers that can impact academic performance,

attrition, and persistence to graduation. Understanding these factors will help in establishing effective programs that actually assist GED diploma undergraduates in completing their educational goals.

6. Additional research is also necessary to determine if other variables can predict which GED undergraduates drop out and which do not. Similarly, other variables may exist that determine which GED undergraduates graduate and which do not. This information could prove beneficial to adult educators, members of higher education, and those GED diploma students who want to pursue their education in public, four-year postsecondary institutions.

7. Further investigation is needed on the relationship between financial aid and academic performance. Similarly, research designed to examine the relationship between financial aid and persistence and attrition is also needed to determine what assistance is necessary to help GED undergraduates successfully complete their educational endeavors.

Conclusion

As the percentage of GED diploma students who pursue higher education in four-year institutions increases, it is important that those who work with them better understand who these nontraditional students are, how they perform academically, and their persistence and attrition behaviors. In turn, adult education programs, colleges and universities, and state-level education departments can explore ways to improve GED undergraduates' experiences and chances for success. For Virginia, this study provides initial information about GED undergraduates who directly enrolled in and pursued their education in public, four-year postsecondary education institutions. The information presented can be used as an impetus for further research needed on this population of nontraditional undergraduates.

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