

SOCIAL AND ECONOMIC CHARACTERISTICS RELATED TO THE IMMEDIATE
COLLEGE TRANSITION OF RECENT HIGH SCHOOL GRADUATES: A STUDY
OF SOUTHWEST REGION TRIO PARTICIPANTS' COLLEGE CONTINUATION

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The purpose of this study was to determine whether: 1) Southwest Region TRIO high school students between the years 1991 - 2001 continued to college immediately after high school at rates significantly different than similar population students on national and state levels; and 2) immediate college continuation for this group was a function of social and economic characteristics including race, gender, parental education, and home-care environment. The sample included 414 TRIO program participants from Texas, Oklahoma, New Mexico, Louisiana, and Arkansas. Data on the 414 participants were gathered using an existing database containing demographic and post-secondary enrollment information on study participants. The findings of this study reveal Southwest Region TRIO students during this ten-year period continued to college immediately after high school at rates not significantly different than the national low-income population of students. Results indicate that when compared to all students in the five-state southwest region, the majority low-income, first-generation TRIO population continued to college at rates not significantly different than all-income students in the region. Findings of this study also revealed select social and economic characteristics were not predictors of immediate college continuation for this group. Finally, the study showed out-of-home care environment students continued to college at significantly higher rates than in-home care Southwest Region TRIO students.

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CHAPTER I

PURPOSE, BACKGROUND, AND HYPOTHESES OF STUDY

The purpose of this study was to compare Southwest Region TRIO program participants' college continuation rates with national and state trends for similar student populations based on income, gender, first-generation college student status, and underrepresented ethnic minority. TRIO—originally instituted as three programs—refers to federal educational programs serving students from disadvantaged family backgrounds. This study utilized University of North Texas Upward Bound Math and Science (UBMS) Regional TRIO Center data from 1991 – 2001 to compare TRIO participants' college continuation trends with national and state trends. The ten years of data included demographic and academic information of program participants served since the University of North Texas UBMS Center served its first cohort of TRIO participants (summer 1991) through its most current program year (summer 2001).

The secondary focus of this study was to make within group comparisons of college continuation among TRIO participants by race/ethnicity, gender, income, first-generation college status, and type of home-care environment. The influence of family diversity as a non-academic characteristic related to college continuation was compared between two TRIO participant student populations: those students whose home environment was described as an “in-home” care situation, in which the student lived with at least one biological parent; and those students who lived in an “out-of-home” care

environment, in which the student did not reside with at least one biological parent. Out-of-home care students may live in traditional foster care families, kinship care environments (in which a relative such as a grandmother, aunt, or older sibling cares for the student without the legal or formal foster placement process), or foster kinship families (in which a state agency has granted legal guardianship to a relative). Family diversity, specifically out-of-home care placement, although increasing among low-income minority students, has not been examined to date in the literature addressing social and economic characteristics related to the college continuation of TRIO participants.

Study findings have implications for, and subsequently an impact on, practice and policy related to college preparation and college continuation of first-generation, low-income and underrepresented secondary students in the southwest region of the United States and the nation. Federal policy exists to increase educational opportunities for low-income, first-generation, underrepresented ethnic minority students. Federal financial aid programs and Upward Bound programs are the largest of these. This study provided information expanding the existing knowledge base of college continuation patterns of Southwest Region TRIO students.

This study yielded empirical data showing Southwest Region TRIO students—predominantly low-income and first-generation college—continued to college immediately after high school at rates not significantly different from the general population of students in the southwest region. The present study also found Southwest

Region TRIO students continued to college at rates not significantly different from low-income students nationally.

Background of the Study

In 1965 the Federal Higher Education Act was passed, and the U.S. Department of Education instituted the first federally supported education programs designed to increase the college enrollment and completion rates of students from socially and economically disadvantaged backgrounds. Commonly referred to as TRIO, the first three education programs were created with the titles Educational Talent Search, Upward Bound, and Student Support Services. These programs were born out of President Lyndon Johnson's War on Poverty and the Economic Opportunity Act of 1964. Since passage of this federal legislation almost 40 years ago, increasing low-income and minority student participation in education beyond high school has been an important national public policy goal (O'Brien & Shedd, 2001).

These programs serve disadvantaged student populations specifically targeting ethnic minority, low-income, and first-generation college students. Original federal TRIO legislation describes educational access programs designed to promote and support equal access to college for low-income students and groups traditionally underrepresented in higher education programs. Later expanded to include seven education opportunity programs, the main purpose of assisting disadvantaged students through the academic pipeline from middle and high school to higher education, has remained. The name TRIO—referring to the initial three programs—has also remained.

The success of these programs in increasing the college readiness and college attendance of this student population has been documented in the literature (Cabrera & La Nasa, 2000a; Balz & Esten, 1998; McLure & Child, 1998). However, more than 35 years after creation of federal TRIO programs, the challenge of preparing disadvantaged students to move beyond the attainment of a high school diploma and succeed in higher education is still daunting.

Over the past 30 years in the United States, African American, Hispanic, Native American, and low-income students have completed high school and attended college at consistently lower rates than their white and higher-income student counterparts (National Center for Education Statistics [NCES], 2002). Today, African Americans, Hispanics, and Native Americans are still less likely than whites and Asians/Pacific Islanders to attend institutions of post-secondary education, and low-income students are less likely than middle and higher income students to attend post-secondary education (NCES, 2002; Akerhielm, Berger, Hooker, & Wise, 1998; NCES 1997). In a recent report of Latinos in higher education published by the Pew Hispanic Center, Fry stated, “Latinos are now the most poorly educated major population group in the United States” (2002, p.1). Latino and African American males average 10.6 and 12.2 years of schooling respectively compared to 13.3 years of schooling for white males (Fry, 2002).

According to The Condition of Education 2002—an annual NCES status report summarizing important developments and trends in education using the latest available data—racial disparity in both college attendance and degree completion persists. In 2001, among all Americans between the ages 25-29, 58% had completed some college (NCES,

2002). However, in 2001, among adults between 25-29, 65% of whites completed some college compared to 51% of African Americans and 32% of Hispanics. Finally, among the same age group who had completed college, both gender and racial disparity exists. In 2001, 31% of women, 26% of men, 33% of whites, 18% of African Americans, and 11% of Hispanics attained baccalaureate degrees (NCES, 2002).

Recognizing the need to “bridge the gaps” in higher education achievement, individual states through respective state higher education coordinating boards are addressing access and equity by instituting multi-year plans defining immediate and long-term goals, integrating recruitment and retention strategies, and recommending actions for individual state institutions of higher education. These comprehensive state plans require ongoing higher education status reports including data on the enrollment, retention, and educational attainment of ethnic groups traditionally underrepresented in higher education—African Americans and Hispanics.

One such example of a comprehensive strategic and legislative agenda for addressing unequal college access was published by the Texas Higher Education Coordinating Board in 2002 (Texas Higher Education Coordinating Board, 2002). Called Closing the Gap by 2015, it is a progress report and summary of strategic and legislative actions to increase higher education participation among underrepresented groups in Texas. The initiative was first introduced in 1994 as Access and Equity 2000, the Texas Educational Opportunity Plan for Public Higher Education. A six year plan, the purpose was to add to the state’s future economic vitality by developing a strategic and comprehensive plan to improve the “state’s ability to educate all of its people and help

them develop the work and social skills needed to compete with workers of other nations and states in [a] global economy” (Texas Higher Education Coordinating Board, 1994, p.1).

Initial goals and recommendations to be adopted by all Texas state institutions included strategies to increase the undergraduate graduation rates of African American and Hispanic students to at least parity with the graduation rate of white students. In 1994, one specific strategy included for the purpose of creating a “seamless” K-16 education, was the identification, replication, and expansion of proven collaborative K-12 and higher education partnerships and programs that successfully prepare minority students for college. The 2002 progress report includes new legislation such as: 1) the establishment of a statewide public awareness campaign to promote the value and availability of higher education; 2) requirements for elementary, middle, and high school counselors to advise students on higher education; 3) requirements for school districts with low college-going rates to establish a partnership with institutions of higher education for the purpose of implementing strategic plans to increase higher education enrollment rates.

Federal TRIO programs are an example of educational programs aimed at successfully preparing students for post-secondary education. Designed for the purpose of preparing low-income and ethnic minority students for higher education and breaking the cycle of poverty, TRIO programs are regarded as transition programs, bridging the gap between high school and college. However, at current levels of federal funding, these

programs serve less than 10% of the eligible population (Council for Opportunity in Education, 2000).

It is projected that by the year 2015, 42% of the United States population between ages 0-24 will be from minority groups (College Board, 1999c). By the year 2010, four states, California, Florida, New York, and Texas, will have minority youth populations of more than 50% (U.S. Bureau of the Census, 1995), and by the year 2050, about half (approximately 49.4%) of the U.S. population will be composed of individuals from diverse ethnic backgrounds—14.7% African American, American Indian 1.1%, Asian and Pacific Islander 9.3%, and Hispanic 24.3% (U.S. Bureau of the Census, 2000). The largest ethnic minority increase will be among the Hispanic population, increasing from 12.1% in 2001 to a projected 24.3% in the year 2050. Resulting from an increase in the minority youth population, high school enrollment and completion rates are projected to change showing increased numbers of high school students and graduates from ethnic minority backgrounds. In 1960, approximately 7% of United States high school graduates were members of racial and ethnic minority groups; by the year 2012, approximately 40% will be (Mortenson, 2002).

As further reflection of the nation's overall increasing ethnic diversity and diversity among the college age population, results show that one-third of the high school seniors who took the Scholastic Aptitude Test (SAT) college admission exam in 2001 were ethnic minorities (College Board, 2001). This is an important trend because, again, federal TRIO programs are currently funded to serve only approximately 10% of the eligible population. TRIO's ability to serve so few eligible students coupled with an

increase in the United States ethnic minority population, suggests the importance of further examination of the socio-political context of post-secondary education achievement.

Of the factors most influential in higher education enrollment, student mobility is one area likely to be increasingly evident among TRIO students in the near future. National data show an increasing number of students in out-of-home care or foster care and kinship care environments. According to the U.S. Department of Health and Human Services, the number of children in foster and kinship care in the United States has increased in recent years (U.S. Department of Health and Human Services, 2000; National Clearinghouse on Child Abuse and Neglect, 2001). In 2001, the National Clearinghouse on Child Abuse and Neglect (NCCAN) reported between September 1990 and September 1998, the number of children in foster care rose from 405,743 to 560,000. Subsequently, there has been an increase in the number of out-of-home care—foster or kinship care—children enrolled in American public schools.

While there has been an overall increase in the numbers of children in foster care, there has been a notable increase in the number of African American and Hispanic children in foster care (NCCAN, 2001). Between 1990 and 1998, African American and Hispanic child representation in foster care increased while the number of white and other/unknown race children decreased. In 1990, the percentage of African American and Hispanic children in foster care was 41% and 8%, respectively, compared to 1998 figures of 44% and 15%, respectively. In 1990, white and other/unknown race children in foster

care represented 40% and 11%, respectively, compared to 1998 percentages of 34% and 7%, respectively.

In 2000, the number of children in foster care in the United States was 588,000 (National Center for Resource Family Support, 2002). Further, the majority of foster children in the United States are predominately children of color and residents of urban areas (Schwartz, 1999b); 56% of all children in foster care were ethnic minority (U.S. Department of Health and Human Services, 2000). This trend should also be of great concern for pre-college programs supporting the academic achievement of low-income, first-generation college and ethnic minority students such as TRIO because according to the U.S. Department of Health and Human Services (2000), kinship care providers are older, likely to be single, more likely to be African American, and more likely to be low-income and have lower levels of education.

Although family diversity which may arise from kinship and foster care child placements is a recently emerging social trend with implications for education, the impact of social and economic disadvantages—such as low levels of parental education, low-income status, and race/ethnicity—on post-secondary education achievement has been studied over the last several decades. These studies were most abundant in the 1980s and 1990s, decades in which there was a noticeable increase in concerted efforts at the state and federal levels to address issues of racial inequality in higher education. On the federal level, agencies and offices were created. For example, the Office of Minorities in Higher Education (OMHE) was created in 1987 by the American Council of Education (ACE) in response to declining rates of minority participation in American post-secondary

education. On the state level, special access and equity divisions began to emerge in state higher education coordinating boards. These units continually collect data and report the status of minorities in American higher education institutions and provide information on effective educational programs supporting the post-secondary achievement of minority groups. College preparation, recruitment, retention, and graduation strategies are disseminated through these types of offices.

Documented success of TRIO programs and their ability to increase college access for low-income Americans exists as a result of TRIO legislation mandating ongoing evaluation to test program effectiveness (Coles, 1998). However, no empirical regional studies could be found with a specific focus on TRIO student college continuation immediately after high school graduation. A search of dissertation abstracts and TRIO literature from 1967 – 2002 revealed single program or state investigations focusing on topics such as individual program histories, student attitudes, instructional approaches and participant educational achievement. Despite the proven relationship between immediate college continuation after high school and baccalaureate degree attainment (NCES, 1997; Hossler et al., 1999; NCES, 2002), no national or regional studies specifically focusing on the immediate college continuation of TRIO high school students were identified.

Upward Bound, which is the first of the initial three TRIO programs, is the most researched. Studies of TRIO program effectiveness focus almost exclusively on Upward Bound students and report college attendance within two years after high school graduation. These studies also report academic characteristics such as high school

grades, SAT and American College Test (ACT) scores, and high school academic track. Program data reported annually to the U.S. Department of Education summarize TRIO student participant demographic information and percentage rates of high school completion, eventual college enrollment, and post-secondary achievement. However, these reports by individual programs—operating independently of one another—across the nation are sent to the U.S. Department of Education and data are not always statistically analyzed and published. More empirical data are needed to expand the existing knowledge base about overall TRIO program effectiveness (Blake, 1998). Therefore, a limited knowledge base has been developed on TRIO student immediate post-secondary transition—enrollment in the fall following high school graduation.

No studies have been identified in the literature that examine college continuation of TRIO students focusing on social and economic characteristics related to continuing to college within 12 months of high school graduation. Evidence documenting the success of TRIO programs in increasing the likelihood of college access for low-income Americans exists (Cabrera & La Nasa, 2000a). However, again, college continuation has been shown to be positively related to actual degree completion (NCES, 1997; Hossler et al., 1999) and has not been examined in the literature in relationship to TRIO program participation. In addition, no studies were identified that had examined immediate college continuation rates of students who had participated in more than one high school TRIO program—as this study does.

Further, there are studies to date that have examined race/ethnicity, gender, income, and first-generation college status related to college enrollment (McDonough,

1997; Akerheilm et al., 1998; McClure & Child, 1998; O'Brien & Shedd, 2001).

However, none were identified that had examined whether these variables were significant predictors of the likelihood of TRIO program participants' college continuation immediately after high school graduation. These social and economic factors are positively related to college enrollment among the general population (Kao & Tienda, 1998; O'Brien & Shedd, 2001). It is important to know whether these factors are related to—and if they are significant predictors of—likelihood of immediate college enrollment among TRIO program participants.

Finally, as the number of children in foster care is rapidly increasing and the majority of students in foster families are minority and residents of urban areas (U.S. Department of Health and Human Services, 2000), TRIO programs that target minority and urban student populations can be expected to serve a growing number of students in foster care (out-of-home care) environments. Questions that have not been addressed in the literature include: 1) Among TRIO participants, is there difference between in-home care and out-of-home care college continuation? 2) Is type of home-care environment a significant predictor of college continuation among program participants?

One way to understand further the factors related to TRIO students' college continuation and success is to compare college continuation trends among TRIO participants with national and state trends. With the growing number of minority populations in the southwest region of the United States and the nation as a whole (U.S. Census Bureau, 2002), sound research of educational programs serving these populations is needed. Research on educational opportunity programs such as TRIO can inform best

practices for supporting the college continuation and higher education achievement of today's ethnic minority population, the projected majority population of tomorrow.

The present study was based on college continuation and college enrollment data. The college continuation rate is the proportion of high school students enrolling in college the following fall upon graduation from high school (Mortenson, 2000). Data and statistics on the attendance trends of women, African Americans, Hispanics and the poor since the 1940s have been reported in the Postsecondary Education OPPORTUNITY newsletter. By analyzing annual U.S. Census data, the studies conducted by Postsecondary Education OPPORTUNITY (PEO) have continually shown disproportionate educational achievement in favor of white, non-Hispanic populations. The studies reported in PEO do not report college continuation of students who have been served by pre-college programs such as TRIO.

Similar to the PEO studies, except with a focus on TRIO students, the present study examined college continuation trends of low-income, first-generation college students in the southwest region of the United States between the years 1991 and 2001. The researcher selected the following social and economic characteristics for examination as existing literature has shown these characteristics to be related to college enrollment and achievement: ethnicity, gender, socio-economic status/income level, parental education/first-generation college. Home-care environment is an emerging trend among TRIO eligible students (low-income, minority, urban) and has not been examined in the literature specific to TRIO students and post-secondary education attainment. Therefore, type of home-care environment was also selected as a social characteristic to be

examined in relation to college continuation among the Southwest Region TRIO sample studied.

As college continuation after high school is related to likelihood of actual degree attainment (NCES, 1997; NCES, 2002), examination of factors related to TRIO students' "staying in the educational pipeline" after high school is important. Further, TRIO programs are evaluated on post-secondary educational outcomes such as degree completion. College continuation increases the likelihood that students will earn a baccalaureate degree. Therefore, it is a critical aspect in the evaluation of pre-college programs designed for the purpose of increasing the post-secondary achievement of socio-economically disadvantaged students nationally and in the southwest region.

The United States Census Bureau October Supplement of the Current Population Survey (of 60,000 households nationally) is the only data source of annual college continuation after high school completion. The United States Census Bureau provides this data to the Department of Labor and Statistics who then publish the data annually. Although the National Center for Education Statistics' Digest of Education Statistics reports college continuation by state every two years, college continuation data are not analyzed or published by region. This study provided southwest regional data on the college continuation of high school students who participated in a pre-college program—TRIO.

Although high school completion rates in the southwest region of the United States (Texas, Arkansas, Louisiana, New Mexico, Oklahoma) are lower than the national average (NCES, 1997), no other studies focusing on Southwest Region TRIO program

participants' high school completion and college continuation have been conducted.

Again, college continuation is an important area to examine because it is a phenomenon research has shown to be related to actual degree attainment—the goal of all federal TRIO programs. Students who enroll in college immediately after high school are more likely to actually earn a baccalaureate degree (NCES, 2000; Hossler et al., 1999).

Although college continuation is an important factor in overall post-secondary success for all students, there is only one source of data on immediate college transition of recent high school graduates. Annual census surveys from which data are gathered are helpful in providing data on overall college continuation patterns of recent high school graduates; however, again, these data are not analyzed by region. Further, the census surveys do not ask householders about recent high school graduates' pre-college program participation. Therefore, the existing data source does not provide indications of immediate post-secondary transitions of students who have been served by pre-college programs. Therefore, the true impact of pre-college programs such as TRIO on college continuation is difficult to ascertain.

This study contributed to the existing knowledge base on college continuation of students served by pre-college programs such as TRIO. To date, a study of TRIO programs in the southwest region of the United States had not been conducted. This study is beneficial to Southwest Region TRIO professionals and educators, as well as state and federal policy makers and the United States Department of Education TRIO project representatives responsible for evaluating, reporting, and documenting the success of federal TRIO programs.

Finally, this study was a response to queries regarding the “intellectual consequences” of TRIO programs (Blake, 1998). Specifically, this study of social and economic characteristics related to college continuation of Southwest Region TRIO participants has provided documentation of overall southwest region college continuation patterns and Southwest Region TRIO students’ college continuation compared to general population students regionally and nationally.

Research Objectives

The primary objectives of this study were to determine whether: 1) differences exist between the college continuation rates of Southwest Region TRIO program participants and similar populations on the national and state levels; and 2) college continuation rates among Southwest Region TRIO participants between 1991 – 2001 are a function of race, gender, family income, first-generation status, and home-care environment.

Research Questions

The present study included two primary research questions: 1) How do college continuation rates of TRIO students from the southwest region between the years 1991 – 2001 compare to the college continuation rates of similar population students nationally and on state levels; and 2) Among Southwest Region TRIO student participants from 1991 - 2001, is college continuation a function of race/ethnicity, gender, income, parental education/first generation college status, and type of home-care environment?

The dependent variable was college continuation. College continuation refers to enrollment in a post-secondary institution by October (fall) of the high school graduation year (first beginning academic year eligible for college enrollment). Independent variables included race/ethnicity, gender, income, first-generation college student status, and type of home-care environment.

This study sought to determine whether the hypotheses listed below are supported by the data:

Researcher's Hypotheses

The first hypothesis was based on the first research question—how do Southwest Region TRIO students' college continuation rates compare with college continuation rates of similar population students on national and state levels? The researcher hypothesized:

H-1 There is a significant difference in the college continuation rates between Southwest Region TRIO students and similar population students (i.e., income, first-generation college status, gender, race/ethnicity) nationally.

The second hypothesis was based on the second research question—among Southwest Region TRIO student participants, is college continuation a function of race/ethnicity, gender, income, first-generation college status, and type of home-care environment? The researcher hypothesized:

H-2 College continuation rates among TRIO students from the southwest region is a function of race/ethnicity, gender, income level, first-generation college status, and home-care environment.

An existing University of North Texas (UNT) TRIO Center for Student Development database consisting of information pertaining to college continuation, post-secondary enrollment and achievement of UNT Upward Bound Math and Science TRIO participants was used in this study. Permission to use the database was granted by the University of North Texas Institutional Review Board and the UNT TRIO Center for Student Development Co-team of Directors: Kathy Taylor, Director Educational Talent Search, Dianne Newman, Director Upward Bound, Judy Morris, Director Ronald E. McNair Program, Consuelo Ballom, Director Student Support Services, and Dr. Doug Elrod, Director of the Upward Bound Math and Science Regional Center.

The TRIO Center for Student Development is housed in Highland Hall on the campus of UNT and is the largest center of its kind in the southwest region, housing five of the seven existing federal TRIO programs in one university campus building. Two of the five programs housed at UNT support the higher education achievement of students currently enrolled in college: Student Support Services and the Ronald E. McNair Program. Three of the TRIO programs in the UNT TRIO Center for Student Development serve low-income, first-generation college, underrepresented high school students: Upward Bound, Educational Talent Search, and the Upward Bound Math and Science Regional Center.

Upward Bound and Educational Talent Search serve TRIO eligible (low-income, first-generation, ethnic minority) high school students from the state of Texas only. Upward Bound Math and Science Regional Center serves high school students from Texas, Arkansas, Louisiana, New Mexico, and Oklahoma that: 1) are eligible for participation in TRIO programs (low-income, first-generation, underrepresented minority), 2) have participated in any Educational Talent Search or Upward Bound Program in the region, and 3) reside in one of the southwest region states (Federal Region VI): Texas, Arkansas, Louisiana, New Mexico, Oklahoma. For the purpose of gathering data from a regional sample of all TRIO education programs serving high school students (Upward Bound, Talent Search, and Upward Bound Math and Science), this study utilized data from the UNT Upward Bound Math and Science Regional Center.

Data for all UNT TRIO programs is collected and manipulated using a computer database to store participant information. Demographic information (grade, age, gender, income-level, parental education, race/ethnicity, school district), academic and post-secondary achievement information (high school completion, grade point average (G.P.A.), expected high school graduation, high school graduation date, college applications, college enrollment, degree attainment, college G.P.A.) are consistently updated and stored in the database for all program participants.

The goals of TRIO programs serving high school students include assisting students with: 1) high school completion and 2) college enrollment/completion. The goal of all TRIO programs serving high school and college students is to increase the number of undergraduate degrees awarded to low-income, minority, and first-generation college

students. In an effort to help programs document student college enrollment and achievement, individual program databases were designed to record student progress data. For example, each individual TRIO program (e.g. Upward Bound Math and Science) database stores student contact information, grade, age, gender, income-level, parental education level, race/ethnicity, academic achievement, and school district. Once a student is served by any of the individual TRIO programs, the student is tracked and dated educational achievement records are documented in the program database for up to ten years, primarily for the purpose of documenting program success.

Ongoing documentation is required by the federal government and stated in the federal TRIO legislation. However, statistical analysis of program data is not required of individually funded programs. Furthermore, studies commissioned by the U.S. Department of Education are generally for program evaluation purposes, and, to date, these studies have not been comprehensive by region.

Definitions of Key Terms

Post-secondary attendance/enrollment – attendance/enrollment in a post-secondary education institution such as a community college, college, or university at any time. Post-secondary attendance/enrollment is not limited to enrollment by the October/fall following high school graduation (which is defined as college continuation in the present study).

Higher education achievement – refers to higher education enrollment, persistence, retention, and eventual degree attainment.

College continuation/immediate college transition – enrollment in junior college, college, or university by October/fall of the year of high school completion. College continuation is slightly different from simple post-secondary attendance/enrollment. College continuation indicates that a student continued to post-secondary education upon high school graduation (by October of high school graduation year). The term college continuation is used by Postsecondary Education OPPORTUNITY, an organization which has studied the college matriculation rates of the poor and women for the past several decades. Immediate college transition is the term used by NCES and is synonymous with college continuation.

Home-care environment/placement – the type of guardianship reported by the student. There are two types of home-care environments examined in this study, in-home and out-of-home care environments.

Out-of-home care environment – student does not live with at least one biological parent. These students may live in traditional foster care families, kinship care environments (in which a relative such as a grandmother, aunt, or older sibling cares for the student without the legal or formal foster placement process), or foster kinship families (in which a state agency has granted legal guardianship to a relative).

In-home care environment – student lives with at least one biological parent.

Underrepresented student – ethnic minority students typically underrepresented in higher education institutions (i.e., African American, Hispanic, and Native American students). Other studies may use the term underrepresented to include gender, income, and ability level.

Low-income student - meets federal TRIO guidelines for low-income families, (in 1998, an income of no more than \$24,000 for a family of four), and are eligible for federal financial aid due to low-income status. As per federal TRIO guidelines, the low-income TRIO students in the present study come from families whose income is no more than 150% of the government-established poverty level. For example in 1998, the poverty level was \$16,000 for a family of four. Low-income TRIO students could come from families whose income was no more than \$8,000 above the poverty level (\$24,000 for a family of four; $\$24,000 = 16,000 \times 1.50$).

TRIO students – secondary and post-secondary students who are first-generation college (would be first in immediate family to receive a four-year college degree), low-income (meets federal TRIO guidelines for low-income families, eligible for federal financial aid due to low-income status), and underrepresented (African American, Hispanic, and Native American) students. Two-thirds of all TRIO students nationally come from families with incomes less than \$24,000 and from which neither parent holds a college degree. In 1998, 39% of TRIO students nationally are European American, 36% are African American, 16% are Hispanic American, 5% are Native American, and 4% are Asian American. Students served by TRIO may or may not be U.S. citizens. Therefore, Hispanic American and Hispanic, Asian American and Asian are equivalent in the present study and used interchangeably.

Southwest TRIO (SW TRIO) students– refers to TRIO students from the five states in the southwest region of the United States: Texas, Arkansas, New Mexico, Oklahoma, Louisiana. These students participated in at least two of the three TRIO

programs serving high school students (Upward Bound, Educational Talent Search, and Upward Bound Math and Science). These students were recruited from either an Educational Talent Search or Upward Bound Program in the student's home state and were subsequently served by Upward Bound Math and Science during a five-week residential summer program between 1991-2001.

TRIO high school programs – refers to the three TRIO programs serving high school students: Upward Bound, Educational Talent Search, and Upward Bound Math and Science. There are eight federal TRIO programs in all; however, only three programs (stated above) serve students during the high school years.

Educational Talent Search/Talent Search – one of the first three TRIO programs; Educational Talent Search (Talent Search) is the only TRIO program serving both middle school and high school students. The goal of the program is to prepare both middle school and high school students from disadvantaged backgrounds for college enrollment and a successful post-secondary education experience. Educational Talent Search programs seek to identify students in grades 6 – 12 having the potential to succeed in college.

Upward Bound – one of the first TRIO programs; Upward Bound (UB) serves students in grades 9 – 12 of high school. As with all TRIO programs, the goal of the Upward Bound program is to increase the rates at which disadvantaged students enroll in and graduate from college. Educational activities central to the program's design are focused on college preparation and readiness. In accordance with federal policy, students who participate in Upward Bound programs nationally are provided services supporting

the college application process such as preparation for college admissions exams. Most UB programs have a summer residential component during which students are oriented to college through a five-week campus experience in which students live on campus and attend workshops and classes with college students. In addition, during the high school academic year, Upward Bound programs assist students with the successful completion of high school requirements by offering tutoring and other academic and study skill workshops.

Upward Bound Math and Science (UBMS) – Five-week university summer residential program focusing on encouraging and offering experiences in math and science. Students are recruited from either an Educational Talent Search program or an Upward Bound Program. UBMS at the University of North Texas serves roughly 50 students annually/per summer.

TRIO Program Regional Center – TRIO program serving students from many states in a given region of the country.

Note: Given population demographics of the southwest region of the United States with higher proportions of Latinos, in the state of Texas and the southwest, TRIO student demographics show larger numbers of Hispanic American students.

The study overview presented here established both a context and justification for an examination of college continuation among Southwest Region TRIO participants. Delayed college enrollment after high school completion has been shown to reduce the likelihood of eventual degree attainment. The purpose of federal TRIO programs is to

increase the number of higher education degrees awarded to socially and economically disadvantaged groups. Studies to date have been on a national scale and have examined TRIO college enrollment within two years of high school graduation. To date, no studies have focused on Southwest Region TRIO participants' immediate college continuation by October of the high school completion year.

Chapter II—Review of the Literature—presents existing literature pertinent to the present study. A discussion of the literature on federal TRIO programs, racial and socioeconomic disparity in post-secondary education trends, educational achievement theory, and an overview of college continuation research is presented.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter reviews literature relevant to federal TRIO programs serving disadvantaged secondary students (Upward Bound, Talent Search, Upward Bound Math and Science [UBMS]), post-secondary enrollment and educational achievement of low-income, first-generation and underrepresented student populations. Finally, providing a context for the second research question, relevant literature related to family diversity and educational attainment is presented.

TRIO Programs: An Overview

In 1965 the Federal Higher Education Act was passed, and the U.S. Department of Education instituted federal TRIO programs—education programs designed to assist students through the academic pipeline from middle and high school to higher education. Federal TRIO programs were born out of President Lyndon Johnson’s War on Poverty and the Economic Opportunity Act of 1964. The TRIO programs were developed to promote equal educational opportunities for all Americans, regardless of race, ethnic background, or economic status (Balz & Esten, 1998). The programs were designed to offset institutional and sociological disadvantages of low-income Americans whose parents lacked college education (Cabrera & La Nasa, 2000a). TRIO began with three programs designed to promote and support college completion of student groups

traditionally underrepresented in higher education programs. TRIO programs serve low-income, first-generation college and students belonging to ethnic groups traditionally underrepresented in higher education: African American, Hispanic, and Native American student populations.

When first introduced in 1965, TRIO programs consisted of three education opportunity programs: Educational Talent Search, Upward Bound, and Student Support Services. Educational Talent Search and Upward Bound programs targeted secondary students for the purpose of assisting low-income, first-generation, and underrepresented students transition from high school to college. Student Support Services provided the necessary support for the retention of these students once enrolled in higher education programs.

Today, TRIO includes five additional educational programs: Equal Opportunity Center (EOC) and Veteran's Upward Bound (VUB) providing college information and preparation to TRIO eligible adults and military veterans; Staff and Leadership Training Authority (SLTA) providing training to TRIO project directors and staff; Upward Bound Math and Science (UBMS) programs offering Upward Bound and Talent Search students an opportunity to strengthen math and science skills; and Ronald E. McNair Post-Baccalaureate Achievement (McNair) programs preparing TRIO eligible college juniors and seniors for doctoral education. Although the TRIO initiative has expanded to include eight programs nationally, improvement of educational outcomes of low-income, ethnic minority students remains a primary goal.

Nationally, there are over 1,900 TRIO programs serving almost 800,000 low-income Americans between the ages of 11 and 27. Although the majority of TRIO participants belong to ethnic minority groups, TRIO serves all low-income, first-generation students regardless of racial background. Thirty-nine percent of all TRIO students are white, 36% are African American, 16% are Hispanic American, 5% are Native American, and 4% are Asian American; 16,000 disabled students and 25,000 veterans are served by TRIO programs (Council for Opportunity in Education, 1999). TRIO programs are housed within 1,200 colleges, universities, community colleges and agencies throughout the nation.

As the purpose of this study was to examine Southwest Region TRIO students' college continuation trends between the years 1991 and 2001, provided below are descriptions of the three TRIO projects designed to serve and assist secondary students in successful post-secondary transitions: Upward Bound, Educational Talent Search, and Upward Bound Math and Science. Again, college continuation in the present study is described as college enrollment by fall of the high school graduation year.

TRIO PROGRAMS SERVING DISADVANTAGED
SECONDARY STUDENTS: ASSISTANCE AND SUPPORT IN
POST-SECONDARY TRANSITIONS

Upward Bound

Other than financial aid programs, Upward Bound is the largest federal program designed to help American high school students attain post-secondary education (Myers

& Schirm, 1999). In operation at higher education institutions for more than 30 years, the Upward Bound Program targets low-income, first-generation, and underrepresented high school students at all levels, 9 – 12. Presently, there are 772 Upward Bound programs in operation throughout the United States (Council for Opportunity in Education, 1999). As is the case with all TRIO programs, most Upward Bound programs are housed in colleges, universities, and community colleges. Some, however, are housed in social service and education agencies.

Low-income students whose parents have not earned a bachelor's degree are eligible for participation in the program. Serving approximately 50 – 75 eligible students per year, the primary aim is to prepare low-income, first-generation college, and underrepresented secondary high school students for academic success beyond high school. An education opportunity program, the goal of the Upward Bound program is to increase the rates at which this population of students enroll in and graduate from college.

Educational activities central to the program's design are focused on college preparation and readiness. In accordance with federal policy, students who participate in Upward Bound programs nationally are provided services supporting the college application process such as preparation for college admissions exams. In addition, Upward Bound programs assist students with the successful completion of high school requirements by offering tutoring and other academic and study skill workshops.

Stipulated in federal program policy, Upward Bound programs are multi-year programs providing academic services as well as tutoring, counseling, and cultural enrichment activities. Students are encouraged to participate in the programs throughout

their high school years, ideally from grade 9 through grade 12. As the goal of Upward Bound is to enhance students' high school program and prepare students for college, Upward Bound programs offer a residential summer component in which students are further acquainted with and prepared for a successful future college experience by living on campus and participating in summer academic courses of study. The summer residential experience on a college campus is followed during the academic year with weekly mentoring and tutorials. Nationally, all Upward Bound projects serve students throughout the academic year and summer. However, summer residential program components may vary in length.

The University of North Texas Upward Bound (UB) and Upward Bound Math and Science (UBMS) programs offer a five-week summer residence during which time students live in dormitories on the University of North Texas campus. The UBMS program is a summer program for Upward Bound and Educational Talent Search students interested in the math and science field; students are not served by UBMS during the academic year. However, these students participate in “traditional” Upward Bound and Educational Talent Search programs throughout the academic year.

Recruitment for both Upward Bound and Educational Talent Search is conducted on an annual and ongoing basis by program directors and staff. Strategies include recruitment presentations to middle and high school students, teachers, and administrators. Each project has a defined target area—stated in the federal grant—and recruits specifically from the schools within the target area. Once presentations have been made and program information disseminated to students, teachers, counselors, and

administrators, recommendations are made to directors and staff regarding potential participants. Students can nominate themselves for voluntary program participation. Teachers, administrators, counselors, and friends also can recommend someone for program participation. However, again, participation is voluntary. Students are selected by program directors and staff based on need and eligibility. Need is determined by student responses to survey questions related to perceived areas of need in terms of college preparation (i.e., tutoring, financial aid information, tutoring, college application process information, resources presently available to students). Eligibility refers to whether or not the student meets federal guidelines for low-income and first-generation status.

Educational Talent Search

Educational Talent Search (or Talent Search) Programs target low-income, first-generation college, and underrepresented students who show academic promise but may be overlooked in the college preparation process. The goal of the program is to prepare both middle school and high school students from disadvantaged backgrounds for college enrollment and a successful post-secondary education experience. Educational Talent Search programs seek to identify students in grades 6–12 having the potential to succeed in college. Program staff and counselors design and implement educational activities and experiences to nurture and develop the skills and knowledge necessary for college admission and successful completion of a higher education degree.

In accordance with federal policy, nationally and at the University of North Texas, Talent Search staff and counselors travel to schools where they work with both

students and teachers to enhance students' learning experiences. Through academic, career, and financial aid counseling services, participants are made aware of options available to them after earning their high school diploma. Students are assisted in identifying post-secondary programs, college entrance exam preparation, funding sources and college admission and financial aid applications.

Talent Search programs serve the largest number of TRIO population students. Unlike Upward Bound projects, serving approximately 50-75 students per year, Talent Search programs typically serve numbers close to or exceeding 1,000 students annually. In addition to information on college choices, students are provided with information on a variety of vocations and occupations available to them. Workshops promoting self-esteem building, goal setting, and decision-making are also provided. Activities and services are provided on an individual basis and also in whole group settings.

At the University of North Texas, Talent Search students are offered one week of summer program activities that take place on the university campus. Unlike Upward Bound and Upward Bound Math and Science students, program participants do not live on campus. Talent Search students make daily trips to campus to participate in enrichment activities to promote college readiness and attendance.

Upward Bound Math and Science

A federal initiative designed to strengthen the science and math skills of students eligible for participation in TRIO programs, Upward Bound Math and Science is a five-week summer residential program for high school students. The purpose of the program

is to help TRIO population students recognize and develop the potential to excel in the math and science fields. A primary goal of the program is to encourage students to consider mathematics and science related post-secondary degrees and professional careers.

The five-week summer residential experience is the core component of the Upward Bound Math and Science program. During the summer experience, the program's primary objective is to increase the participants' competence in mathematics and science. Competency in mathematics and science allows students to pursue post-secondary degrees and eventually careers in these fields.

The UBMS program at the University of North Texas is a Regional TRIO/Upward Bound Math and Science Center. Each summer, the UBMS program serves 50 participants from five states in the southwest region of the United States. Only students currently enrolled in an Educational Talent Search or Upward Bound program in federal Region 6 are eligible for participation in the Upward Bound Math and Science Regional Center program at the University of North Texas. High school participants are selected from the five states in the southwest region—Texas, New Mexico, Oklahoma, Arkansas, and Louisiana. The UBMS Regional Center has the potential to draw students from as many as 50 different high schools in the five southwestern states.

Students travel from their respective states to the University of North Texas in Denton, Texas. Participants live on campus in student dorms and engage in a summer college experience. Upward Bound Math and Science participants study biology, physics, chemistry, computer programming, or mathematics. Having identified a major area of

study for the summer, students are immersed in the fields of science and mathematics by participating in both classroom activities and research laboratory experiences with University of North Texas faculty mentors in the areas of science, mathematics, and computer science.

TRIO's Effectiveness: The Upward Bound Reports

Of the three TRIO programs designed to serve disadvantaged high school students, Upward Bound programs have been the most researched. There are mixed findings concerning the program's effectiveness (Burkheimer, Riccobono, and Wisenbaker, 1979; Mathematica Policy Research Incorporated, 1997, 1999; McLure & Child, 1998). Concerning academic preparation and high school grades, the research findings are both favorable and unfavorable (see Table 1). However, higher rates of entry into post-secondary institutions and college enrollment for Upward Bound students is consistent throughout the literature (McElroy & Armesto, 1998).

A comprehensive longitudinal study of Upward Bound (UB) between the years 1973 and 1978 revealed greater rates of entry to post-secondary institutions for UB students compared to non-UB students (Burkheimer, Riccobono, and Wisenbaker, 1979). Further, the study produced evidence UB students were more likely to attend four-year higher education institutions rather than two-year colleges when compared to non-UB students. Although it did not examine immediate entry into post-secondary education upon high school graduation, the study found UB had a positive impact on overall

educational aspirations (students' educational goals and expectations), post-secondary education progress, and student persistence.

In a study of social and financial barriers and the ability of TRIO students to succeed in college, researchers reported TRIO's success as largely related to the program's focus on early intervention and its ability to identify and address the barriers to academic achievement (Balz & Esten, 1998). Balz and Esten utilized the NCES High School and Beyond survey of high school sophomores in 1980 following them for more than 12 years (from 1980-1992). Researchers found over 30% of TRIO students attained their baccalaureate degree within 10 years after high school graduation compared to 13% of the non-TRIO population. Further, 11% of TRIO students reported having some graduate school compared to 5% non-TRIO students. Further, 68.4% of TRIO participants enrolled in four-year colleges and universities rather than two-year institutions compared to 41.0% of low-income, first-generation-college, non-TRIO study participants.

McLure and Child (1998) in a national study of ACT college admission exam takers compared 2, 538 TRIO Upward Bound (UB) students to 997,069 non-TRIO Upward Bound students. The researchers found: African American and Hispanic UB students took more math and science courses than their non-UB African American and Hispanic counterparts; UB students prepared for and took the exam earlier than non-UB students; UB students were knowledgeable of and expected to receive financial aid; and finally, UB students had the same if not higher aspirations and plans for college. McLure

and Child (1998) concluded that on a national level, TRIO Upward Bound students were taking the steps necessary for successful college enrollment.

Investigations of Mathematica Policy Research Inc. (1999) found Upward Bound to have a positive effect on students' college enrollment and overall educational attainment but to have no effect on high school academic preparation or grade improvement. The study raised concerns over students' sustained participation in the program due to a number of Upward Bound students who reported reasons for program dropout related to work obligations. Researchers for Mathematic Policy Research Inc. (1999) found Upward Bound had a limited impact on students during the high school years. Researchers reported Upward Bound had no impact on school behavior, participation in extracurricular activities, grade point average, increased communication with parents about high school, or even high school graduation rates. Multiple program participation and increased program exposure was one recommendation of the Mathematica Policy Research Inc. (1999) study.

Related to other research, in a NCES study of first-generation students' academic preparation and post-secondary success, researchers found high school academic preparation related to post-secondary success (enrollment and retention); the more rigorous the high school curriculum, the more likely students were to persist in degree attainment (Warburton, Bugarin, Nunez, 2001). As indicated in Table 1, research has found Upward Bound projects to have both rich and challenging academic programs, but no effect on high school course-taking and post-secondary preparation (Mathematica Inc., 1997). However, all major studies reviewed for the present study have produced evidence

of positive impact on students' aspirations or goals toward college and a positive influence on college enrollment. Balz and Esten (1998) concluded Upward Bound is effective in increasing actual numbers of baccalaureate degrees earned among low-income, first-generation students.

Table 1

Summary of National Upward Bound (UB) Studies 1979 - 1999

Study	Sample Size	Type of Study	Results
			TRIO students indicated
		Longitudinal	high educational
Burkheimer, Riccobono, and Wisnibaker, 1979	National program evaluation	(national) study of post-secondary achievement, 1973 – 1978	aspirations/goals; positive impact on post-secondary education progress, and student persistence
			Increased course credits
Mathematica Policy Research Incorporated, 1997	2,800 UB students	National study of short-term impact of UB (first two years of HS), 1992 – 1994	earned; impact on course taking; no effect on high school academic preparation or grades; participants high attainment expectations

(table continues)

Table 1 (*continued*)

Study	Sample Size	Type of Study	Results
Balz and Esten, 1998	14,000	Longitudinal	TRIO students earned
	TRIO and non-TRIO low SES students	(national) study of post-secondary achievement, 1980-1992	baccalaureate at higher rates; success related to the program's focus on early intervention
McLure and Child, 1998	2,538 UB;	Comparative – means/percentages of non-cognitive ACT components on ACT, 1998	UB student aspirations as
	997,069 ACT/non- UB		high as non-UB students; UB students better understandings of college support; UB more years of English, math, history, science, foreign language
Mathematica Policy Research Incorporated, 1999	1,500 UB; 1300 non- UB	Longitudinal (national) study of post-secondary achievement, 1994 – 1996	Positive influence on higher education; UB as likely as non-UB to enter college; larger impacts on Hispanics, whites, boys, low-income, first- generation; no consistent, long exposure to program

Socio-economic Status, Parent Education, Race and Academic Achievement: Rates of High School Completion and Higher Education Attainment

A growing body of research shows that family income influences college enrollment and completion. Socio-economic status (parents' income, parental education level, and significant others' influence) contributes to the development and maintenance of ambitious academic aspirations during the secondary years (Kao & Tienda, 1998). Further, impoverished living conditions, financial difficulties, poor health, and related emotional stress often result in students from poor families not completing high school (Murray, 1993). Failure to complete high school—an obvious barrier to college enrollment—may translate into yet another barrier to college enrollment. High school dropouts have the challenge of identifying and successfully completing alternative high school completion programs.

Underrepresented minority students are more likely than white students to live in poverty. According to the National Center for Children in Poverty (2002), the overall United States' child poverty rate is substantially higher than that of most other major Western industrialized nations, up to two to three times higher. Over 11 million children (16%) live in poverty—in families with incomes below the federal poverty line (\$13,861 for a family of three in 2000). African American children have the highest rates of child poverty (30%), followed by Latino children child poverty rates (28%). Finally, the child poverty rate for white children is 9%.

According to the United States Census Bureau Current Population Reports (2000), disproportionate median incomes have remained constant over the last decade. In

1993, the median income for white households was \$38,768, for Hispanics the median income was \$26,919, for African American households the value was \$22,974, and for Asian households the median income was \$45,105. In the year 2000, median household incomes were: white - \$44,226, Hispanic - \$33,447, African American – \$30,439, Asian/Pacific Islander - \$55,521.

Academic ability appears to have less influence over college enrollment and completion than family income. Among high ability high school students, low-income students are five times more likely to skip college than high-income students (Akerheilm et al., 1998). High ability high school seniors from low-income families are less likely to attain the baccalaureate degree than high-income students (Ottinger, 1991).

Nationally, high school completion rates of both Hispanics and African Americans lag behind those of white students. Among Hispanic students, 58.6% complete high school, 76.9% of African American students complete high school, while 81.9% of white students finish high school (Carter & Wilson, 1996). A continuation of disparity in high school graduation rates is expected. In 2015, it is projected that racial/ethnic disparities in educational attainment will increase (College Board, 1999c).

The largest educational disparity is in high school completion among Mexican Americans and whites. Mexican Americans—a sub-population of Hispanics and Hispanic Americans—will be four times more likely (39.1%) than whites (8.2%) and twice as likely as African Americans (16.1%) to be without a high school diploma. Approximately 11.5% of Asian Americans will have less than a high school education. Finally, approximately 28.9% of other Hispanics will have less than a high school education.

By 2015, it is further projected that there will be continued racial disparity in college degree attainment. Among adults ages 25 and up, 44.3% of Asians will have earned college degrees while 15.2% of African Americans, 8.1% of Mexicans, 17.3% of other Hispanic, and 29.2% of whites will have earned college degrees (College Board, 1999c).

This inequitable trend in educational attainment is cause for concern because educational attainment is the primary determinant of income and income largely defines American standards of living (Mortenson, 1996). Education is the key to getting out of and staying out of generational poverty (Payne, 1995). However, low socio-economic status in itself may contribute to ambivalence toward academic performance (Kao & Tienda, 1998). Low-income students perceive life opportunities as limited. This has been shown to inhibit their scholastic motivation under traditional education practices (Murray, 1993). Social reproduction theory suggests educational systems are intentionally designed to maintain existing social structures (Apple, 1996); the working and upper classes are reproduced—those who grow up in poverty are likely to live adult lives of poverty, and those who grow up in wealth are likely to live their adult lives in wealth. According to Henry Giroux (1992), one purpose of higher education is to affirm existing views of the world and to create new ones. Giroux (1992) challenges educators and students to analyze the ways in which the dominant culture forces exclusion through borders of inequality.

Research supports social reproduction theory showing students from low-income families are far less likely than students from higher income families to earn a

baccalaureate degree by age 24 (Thayer, 2000). Kao and Tienda (1998) found that due to lower socio-economic backgrounds, early aspirations of African American and Hispanic students are less concrete than those of white and Asian students. Kao and Tienda reported that compared to whites and Asians, African American and Hispanic youth are relatively uninformed about the college admissions process; as a result, their educational goals are hampered. In a study of African American and white high school students, Pitre (2002) found that although African American and white students aspired to college attendance at similar rates, African Americans were lower on measures of academic achievement and academic track—factors that have been found to influence actual college attendance.

Post-Secondary Transition, Enrollment and Completion: National Trends

In addition to low minority enrollment in post-secondary programs, there is an existing disparity in graduation rates (U.S. Bureau of the Census, 1997). The gap in baccalaureate degree completion rates between students from low-income backgrounds and those from higher income households has widened over time (Thayer, 2000). Research has identified six target factors associated with attrition prior to receiving the baccalaureate: low-level of parent education, low-income status, minority ethnicity, lack of information, inadequate college preparation, and lack of scholarly aspirations (Robyn, Klein, Carroll, & Bell, 1993).

According to Akerhielm, Berger, Hooker, and Wise (1998) evidence of the lag in underrepresented minority population college enrollment is apparent in statistics showing

79% of Asians, 66% of whites, 53% of Hispanics, 52% of African Americans, and 38% of Native Americans attend post-secondary education. Surprisingly, African American students have been found to have high aspirations for college attendance, but they are less likely than their white and Asian counterparts to maintain high aspirations (Kao and Tienda, 1998).

African American, Hispanic, and Native American groups are underrepresented at all levels of higher education. Despite overall rising enrollment rates for all race and ethnic groups, participation in higher education is still lower for many minority and low-income students (NCES, 1996). Further, as reported by NCES (1996), regardless of the type of degree pursued, students from low-income and minority backgrounds are less likely to obtain a post-secondary degree.

One possible explanation for the disproportionately low numbers of minorities enrolling in college is that underrepresented minority student groups have been found to have less access to information and resources that can assist them in tasks related to college choice than do their white counterparts (Smith-Maddox, 1999). More than half of the minority students in higher education attend community colleges, but a major cause for concern is only about 12% successfully transfer to and graduate from four-year colleges (Lieberman, 1991).

Theoretical Perspectives of Minority School Achievement

Since the 1960s and 1970s, literature on school achievement has included many theories on the school achievement of ethnic minority students. Theories such as genetic and cultural inferiority theory, social reproduction theory, cultural capital theory, cultural

incompatibility theory, and resistance theory attempt to explain social, political, and cultural issues related to the achievement of ethnic minority students.

Deficit theories such as genetic and cultural deprivation theories operate from a fundamental belief that some children are products of “deprived” home lives and need educational programs that compensate for genetic, cultural, and linguistic deprivation. These theories have been criticized for blaming children and families for deficiencies related to the learning environment—race, social class, language, and other characteristics—that are perceived by the educational system as “deficits” in the process of learning. Schools often perceive students’ language, culture, and social class as inadequate and negative (Nieto, 2000). It is the subsequent devaluing of these student characteristics in the learning environment that may contribute to school failure of some socially and economically diverse student groups.

Social reproduction theory suggests schools reproduce economic and social conditions of society and, therefore, serve only the interests of the dominant class. A fundamental principle of social reproduction theory is that school failure—and success—of certain students is intended, and it is not coincidental (Nieto, 2000). For example, unequal educational outcomes such as low high school completion rates in urban, low-income schools is an intended outcome benefiting interests of the dominant group. The educational structures are designed to “sort” students into particular class levels of society. One critical theorist, Michael Apple (1996) condemns schools for bureaucratic practices and political structures that condemn identifiable people (economically and socially underprivileged and minority students) to lives of economic hardship, cultural

struggle, and despair. Apple's sociopolitical perspective views social injustice in schools as intentional and politically motivated for the purpose of reproducing the underclass and maintaining the power and privilege of the dominant group.

Proponents of Cultural Capital Theory (Bourdieu, 1986) suggest that inherited and transmitted cultural capital has many forms. In addition to cultural capital such as material cultural goods and artifacts, the most valuable—and most hidden—form of cultural capital is the values, tastes, languages, and dialects associated with the dominant group. Bourdieu's theory of Cultural Capital acknowledges that the power, knowledge, and resources are located in the norms of dominant cultures and languages. According to this perspective, to deny the fact students from working-class and dominated groups need to learn the norms of the dominant group is to disempower this student group—seen as the group most academically vulnerable.

Cultural incompatibility theories also known as cultural mismatch theories suggest school failure is the result of “culture clash” (Nieto, 2000). These theorists contend the values, experiences, expectations, skills, lifestyles, and ways of knowing of socially and economically diverse students often go unrecognized in schools and affect achievement. Children from diverse backgrounds bring knowledge, behaviors, and ways of knowing that are often different from and in conflict with the school environment. Instead of recognizing these differences as simply differences—not deficits—and building upon the unique experiences and epistemologies of these students, most school environments operate from an “assimilationist teaching” perspective. The assimilationist

teaching perspective's purpose is to transmit dominant culture beliefs and values (Nieto, 2000).

Cultural mismatch theorists challenge this view and offer hope that teachers can adapt teaching practices to be relevant to their diverse students' experiences and knowledge. Gloria Ladson-Billings (1994) in a study of teacher uses of culturally relevant approaches with African American students found African American students' achievement improved significantly. Teachers and researchers subscribing to culturally responsive or culturally relevant teaching philosophies agree that cultural discontinuity theory alone is inadequate in predicting school success or failure of groups (Nieto, 2000). Vasquez, Pease-Alvarez, and Shannon (1994) conducted a study on the role of language and culture among Mexican immigrants and concluded that although cultural and language difference influenced achievement, a focus on differences resulted in overlooking other important influences such as school climate and teaching style.

Resistance theorists (Giroux, 1983) suggest school failure can be attributed to students' refusal to learn school curriculum as a form of political resistance. These theorists contend cultural differences may initially be the cause of some school failure among dominated groups. However, resistance theorists believe repeated school failures and misunderstandings over time result in an intentional resistance toward the school curriculum by students from underrepresented and underserved groups. These theorists interpret a large part of school failure as intentional resistance behavior of disempowered students, families, and communities in reaction to unjust school structures and practices. Although a political response to negligent treatment of students from dominated groups,

proponents of this theory acknowledge that resistance by students and families is a self-defeating coping strategy. Refusal to do homework, skipping classes, misbehavior, poor relationships with teachers, vandalism and violence are resistance behaviors counterproductive to student or family goals of improved quality of life through educational attainment.

Each of the theories discussed here suggest a different lens for examining issues of educational achievement. However, a predominant theme throughout all of the literature of school achievement—particularly literature on the achievement of students from ethnically underrepresented and low socio-economic groups—is that the issue is complex and calls for the integration of multiple contextual lenses. Sonia Nieto (2000) suggests any of the above theories in isolation are inadequate for explaining the academic achievement of socially and economically diverse populations of students. Nieto contends the educational achievement of all groups is a combination of personal, cultural, familial, interactive, political, and societal issues. Such a comprehensive view—a sociopolitical view--according to Nieto, is a more appropriate way of attempting to understand school achievement.

College Continuation

Related to overall educational achievement, college continuation refers to high school students' immediate transition to college. Although it does not take into account college retention and degree completion, continuation to college is important because according to researchers delaying college entry decreases a student's chance of bachelor

degree completion (NCES, 1997; NCES, 2002). Mortenson (2000a), who studied the post-secondary achievement of the poor and women in America dating back to the 1940s, reports students who do not delay college enrollment after high school have a greater chance to earn a college degree than those students who delay entry. Further, low-income and first-generation students are more likely to remain in the pipeline to higher education attainment by continuing to college immediately after high school (Mortenson, 2001).

Although there has been some decline in college continuation rates in the last few years, the overall college continuation rates of high school graduates have steadily increased between 1972 and 1999. As females' immediate college enrollment has increased faster than males' between 1972 and 1999, much of the growth in college continuation rates can be attributed to an increase of female immediate college enrollment after high school completion (NCES, 2001).

According to The U.S. Department of Education's Condition of Education 2001, there are disparities in college continuation after high school by race (NCES, 2001). White high school graduates' immediate college enrollment rates have increased from 50 to 66% while African American college continuation rates have risen from 40 to 59%. There has been no consistent increase in Hispanic students' immediate college enrollment after high school completion. In 1972, Hispanic students' college continuation rate was 45%. In 1999, the college continuation rate was 42.3%. Between 1972 and 1999, the Hispanic continuation rate fluctuated between 42.0% in 1978 and 65.6% in 1997. In the 1980s, Hispanic continuation fluctuated between 43.2 and 57.1%.

Immediate college enrollment rates differ for high and low-income students. In fact, the gap between rates of continuation among these groups has remained consistent between 1972 and 1999. In 1972, 26.1% of low-income students and 63.8% of high-income students continued to college after high school. Although there has been a steady increase for both groups—as well as middle-income groups—in 1999, there was still an existing disparity. Students from low-income families continued to college at a rate of 49.4% while high-income students continued at a rate of 76.0% (NCES, 2001).

Another consistent gap in college continuation rates has been among first generation college students and non-first generation college students. Research has shown students' likelihood of continuing to college immediately after high school increases with parental education level. According to the U.S. Department of Education's Condition of Education 2001 (NCES, 2001), between 1990 and 1999, students whose parents had some college were more likely to enroll in college immediately after high school than students whose parents had not attended college.

Cabrera and La Nasa (2000) used the NCES National Education Longitudinal Study of 1988 (NELS:88) database to conduct a study of post-secondary transitions of 1,000 low-socio-economic (SES) eighth graders—low-income and low-levels of parent education. The NELS:88 database contained demographic and academic data on almost 15,000 eighth grade students nationally. The NELS:88 study collected data on students from eighth grade year to two years after high school completion. Cabrera and La Nasa revealed of the 1,000 low-SES students, only 144 enrolled in college immediately after graduation. This finding is consistent with data reported by NCES through its annual

Condition of Education report. According to NCES, students whose parents had earned a baccalaureate degree or more were most likely to enroll in college immediately after high school completion (NCES, 2001). In 1990, students whose parents had a high school diploma only continued to college at a rate of 49.0%. In the same year, students whose parents had some college or a college degree continued at rates of 65.6 and 83.1% respectively.

Although there have been fluctuation in rates on all income levels, high-income family students have had the least variation throughout the years in immediate college attendance. Despite fluctuation for all income groups, gains have been made for all groups within the decade. In 1998, students whose parents had a high school diploma and no college enrolled in college immediately after high school at a rate of 57.2%. In the same year, students whose parents had some college or a college degree enrolled immediately after high school at rates of 67.7 and 82.3% respectively. The next year, rates were lower for those students whose parents did not hold a baccalaureate degree. In 1999, students whose parents had a high school diploma only continued to college at a rate of 54.4%. In the same year, students whose parents had some college or a college degree continued at rates of 60.2 and 82.2%, respectively

As continuation research focuses on immediate college entry by fall of the high school completion year, it does not take into account students who return to college at a later time in life. However, accessibility of post-secondary education and the value high school graduates place on college compared to other life pursuits is reflected in the percentage of high school graduates who enroll in college immediately after high school

(NCES, 2001). A decline in college continuation—increased numbers of high school graduates choosing not to go to college—results in economic loss. Entry into the labor market immediately after high school without post-secondary education will mean citizens are not prepared through education to meet the needs of an increasingly technological labor market. Further, entry into the labor force without education results in less pay for individuals meaning less of a contribution to federal and state tax (Mortenson, 2000a).

In a longitudinal study of high school students' decision to choose college, researchers found students who decided in the 9th grade year of high school to attend college after high school graduation more likely to enroll in college immediately after high school graduation than students who were undecided on college attendance (Hossler, Schmit, & Vesper, 1999). Regardless of parent education, early aspirations for college influenced whether students enrolled in college immediately after high school. All of the students who decided to attend college early in the 9th grade year of high school experienced increased college preparation activity in the 11th grade year of high school and successfully continued to college.

Increased activity included more active engagement in the gathering of information such as written information requests to universities, college campus visits, and the reading of college guidebooks. These students sought college and university information beyond parents, siblings, and peers. Teachers, guidance counselors, and college personnel became primary sources of information. These findings are consistent with the research findings of McDonough (1997) who after studying middle-range

academic performers in four California low-income and high-income high schools found availability of resources including human resources in the form of counselors enabled or constrained educational possibilities.

One hundred percent of the “early decision to attend” students in the Hossler et al. study continued to college, and 85% of the students actually earned college degrees. Again, consistent with research suggesting school structures, family background, and social contexts influence students’ choosing college (Cabrera & LaNasa, 2000; McDonough, 1997), students across income levels and from different parental education backgrounds reported parental support and encouragement most influenced their decisions to enroll in college—although guidance counselors, teachers, and college recruiters were critical in the active search phase of college choice.

Other Factors Influencing the Post-Secondary Enrollment and Achievement of Low-Income, Underrepresented, First-Generation College Students

Using data from NELS:88, researchers at Mathtech, Incorporated in conjunction with the United States Department of Education studied both academic and non-academic factors related to college enrollment (U.S. Department of Education, 1998). They found both income and race related to college enrollment. Rates of college enrollment increased with income levels, and African American and Hispanic student college enrollment rates were lower than those of white and Asian students. Other factors related to college enrollment included: gender, income, parents’ education level, urban living, academic preparation, course-taking patterns, private schooling, expectations, drug use, television

watching, and time spent on homework. Further, student mobility (a transfer or change of schools), a trend higher among African American, Latino, Native American and poor children than among white, Asian, and middle and high-income students, represents an important risk factor for dropping out of high school (Rumberger and Larson, 1998).

Horn (1997) in an examination of the NCES NELS:88 database—longitudinal study of almost 15, 000 8th graders through two years after high school—found risk factors that have been shown to put students at risk for not completing high school. Factors included low socio-economic status, single-parent home, and sibling(s) who dropped out. Horn revealed that among students with any risk factors, only 35% of the high school graduates enrolled in college within two-years after high school graduation, compared to 63% of students having no risk factors. Horn’s findings indicated the more risk factors present, the less likely the students were to enroll in college.

Standardized test scores of minority groups are lower than those of the dominant group. The mean combined Math and Verbal SAT scores of underrepresented groups are significantly lower than those of whites and Asian Americans (College Board, 1999). In addition, test-taking rates are decreasing among African American students from low socio-economic backgrounds. From 1997-1999, the total number of African American SAT test-takers from families earning less than \$20,000 decreased by 2% while test-takers from families earning \$80,000 or more increased by 27.6%.

McDonough (1997), in a study of four low and high socio-economic public and private schools in California, found socio-cultural and organizational barriers impacted higher education opportunity. McDonough revealed unequal resources—including

college counselor personnel—in low-income public and private schools resulted in lower rates of college continuation and four-year institution enrollment. Students in high-income public and private schools enrolled in four-year institutions immediately after high school at a rate of 71% and 96%, respectively, while students in low-income public and private schools at rates of 15% and 59%, respectively.

Ponterotto (1990) also reported lack of guidance by high school counselors, in addition to lack of awareness, attractiveness of the military, and decreasing availability of financial aid as factors influencing lack of post-secondary achievement among underrepresented groups. In addition, the lack of available minority role models available in the college setting may have some influence on higher education achievement (Ponterotto, 1990; Wilson & Justiz, 1987). In addition, racism may play a role in lack of post-secondary achievement. Environmental factors such as institutional racism in high schools and racial tensions on college campuses may influence post-secondary achievement of underrepresented student groups (Ponterotto, 1990; Wilson & Justiz, 1987). Finally, related to counseling and guidance, students' development of early aspirations—by the 9th or 10th grade year of high school, goals or plans for college attendance—have been positively related to choosing to go to college (Hossler, Schmit, & Vesper, 1999).

Parent Education Related to College Enrollment, Persistence and Degree Attainment:

First Generation College Student Characteristics and Achievement

Studies by the U.S. Department of Education, the U.S. Bureau of the Census, and others have yielded a consistent, statistically conclusive finding: parents' educational

level and socio-economic status are directly correlated to their children's educational level (U.S. Bureau of Census, 1997). Terenzini and Springer (1996) also found parents' education to be positively related to college persistence and degree attainment. The researchers found first-generation students to be at greater risk for low persistence and degree attainment than their traditional peers. However, once developed, educational aspirations mediate the influence of family background and significant others on ultimate educational attainments (Kao & Tienda, 1998).

First-generation college students are less likely to work with parents in planning for college (Choy, Horn, Nunez, & Chen, 2000), are more likely to be older, have lower incomes, and to have children than are non-first-generation college students (Nunez & Cuccaro-Alamin, 1998). College attrition rates among first-generation students are high. First-generation students are more likely to drop out during the first semester of college and often have lower first-semester grades than students with one or more college educated parent (Riehl, 1994). Further, first-generation college students are likely to enter college with less academic preparation (Pascarella, 1995), and are less likely to take the advanced mathematics courses leading to college enrollment (Choy et al., 2000).

In a study of college students' application processes, McDonough (1994) found major differences in first-generation college and non-first generation students' application practices. While non-first-generation, middle and upper class students applied to a variety of schools (up to 22 applications), first-generation students tended to apply to competitive Ivy League Institutions or less expensive state schools. Finally, first-generation students have high concentrations in two-year colleges (Nunez & Cuccaro,

1998), and transitions to college campuses can be difficult for these students. Research has shown these students are less likely to experience a welcoming environment (Terenzini et al., 1996).

Despite the obstacles first-generation students face, Levine and Nidiffer (1996) conducted a study of low-income and first-generation students who actually managed to achieve success and earn a college degree. According to these authors, one obstacle to attainment of the baccalaureate degree for low-income students is low rates of transition from community college to a four-year institution. The researchers' reported 53% of all college students with family incomes under \$14,000—below the poverty level for a family of four—attend community colleges and subsequently face low rates of successful transition to a four-year institution (Levine & Nidiffer, 1996). Low rates of transition to four-year institutions is a trend common among the community college student population with reported rates of successful transition to four-year institutions below 20% (Adelman, 1988).

Type of institution and early student decisions about post high school plans affect post-secondary achievement. The type of institution attended is important to low-income student post-secondary success because low-income students—who may spend the first post-secondary years at two-year institutions—are far less likely to earn a bachelor degree by age 24 than students from higher-income backgrounds (Mortenson, 1998). Finally, research has shown students from low-income backgrounds often skip college altogether regardless of academic ability (Akerheilm et al., 1998). Levine and Nidiffer (1996) revealed that with respect to low-income, first-generation students who

successfully completed higher education degrees, mentors made the difference. Human contact, wisdom, direction, hope and confidence building were the key ingredients to successful mentor relationships.

Examining data from the first follow-up of the Beginning Postsecondary Students Longitudinal Study for 1995-1996, researchers at NCES conducted a study of first-generation college students' academic preparation and post-secondary success. They examined overall rates of persistence and attainment of first-generation college students three years after initial enrollment. Researchers found high school academic preparation related to post-secondary success (enrollment and retention); the more rigorous the high school curriculum, the more likely students were to persist in degree attainment students (Warburton, Bugarin, Nunez, 2001). Among study participants, 80% of those who stayed on track towards a baccalaureate degree were those students who took rigorous coursework in high school. Rigorous coursework was defined as: advanced science (biology, chemistry, physics); four years of math (verses three years) including algebra I, geometry, algebra II, and pre-calculus; three years of foreign language; and one advanced placement (AP) course.

Furthermore, Warburton et al. (2001) found a disparity in preparation for post-secondary education between students whose parents held college degrees and those students whose parents did not hold college degrees (first-generation college students): 25% of students whose parents had baccalaureate degrees took rigorous college preparation courses, compared to 9% of first-generation students. Finally, researchers produced evidence that even when controlling for measures of academic preparedness

such as rigor of high school curriculum and pre-college exam scores, parents' education levels were associated with rates of students' retention and persistence in college. The college preparedness of first-generation college students is critical to the post-secondary success of socio-economically disadvantaged students (Thayer, 2000) and cannot be overlooked. Authors of the NCES annual Condition of Education (2002) reported rigorous academic preparation in high school as one significant factor in narrowing the gap in post-secondary persistence between first generation and non-first-generation students.

Family Diversity: Students in Out-of-Home Care Environments

The number of children in foster and kinship care in the United States has increased in recent years (U.S. Department of Health and Human Services, 2000). The percent of United States children living with relatives, with no parent present, remained steady from 1983 to 1992. However, there was a 3% increase in 1998, the most recent data collection year. Subsequently, there has been an increase in the number of out-of-home care—foster or kinship care—children enrolled in American public schools and those eligible to be served by federal TRIO programs. In 2000, the number of children in foster care in the United States was 588,000 (National Center for Resource Family Support, 2002). Furthermore, the majority of foster children in the United States are predominately children of color and residents of urban areas (Schwartz, 1999); 56% of all children in foster care were ethnic minority (U.S. Department of Health and Human Services, 2000).

The majority of children in foster care situations are ethnic minority and low-income—TRIO’s target population. Of all children in foster care, at least 56% are ethnic minority—38% are African American; 35% are white/non-Hispanic, 15% are Hispanic, 2% are Native American, 8% are race unknown, and approximately 1% are of Asian/Pacific Islander background; by gender, 52% are male and 48% are female (NCRFS, 2002). According to NCRFS, 25% of all children in foster care in the United States in the year 2000 were in kinship foster care environments (i.e., foster care provided by a relative other than the biological father or mother).

A U.S. Department of Health and Human Services report to Congress on kinship care and foster care, stated in 1998 about 2.1 million children lived in the homes of relatives without a parent being present; about 67% of these live with grandparents (U.S. Department of Health and Human Services, 2000). This figure is an estimate as kinship care cases can be both publicly funded as well as private going unreported and un-funded by the state. One reason for overall growth in kinship foster care is that the number of non-kin foster parents has not grown at the same pace as the number of children in need of foster placement. Another reason is an increasingly favorable attitude by social workers toward family foster care placements (Department of Health and Human Services, 2000).

Further, with respect to kinship care providers, the study revealed kinship care providers were older, likely to be single, more likely to be African American, and more likely to be low-income and have low levels of education. This trend is of concern to

TRIO projects because the education program's target population consists of low-income, minority students whose parents/guardians are low-income and have not earned a college degree.

Diverse families such as grandparent guardianship, kinship care families, or foster families need more services because many of the children in these types of care environments have multiple risk factors such as low-SES, change of schools more than once, and low academic achievement associated with low college attendance rates (Altshuler, 1997). Moreover, the majority of these students have experienced trauma, placement in many homes, and may have problems with truancy because they anticipate failure or because biological parents did not enforce schooling; these students worry so much about survival and absent families, they may view failing school as insignificant compared to their personal problems (Schwartz, 1999a). Students displaced from their homes and removed from the care of biological parents even temporarily have special needs.

High school students living with grandparent guardians, in kinship care families, or foster care may need more services and assistance with post-secondary transitions. The needs of these students are further exacerbated when considering research reporting lower rates of post-secondary transitions and higher education achievement among low-income, ethnic minority, and first-generation students. As the majority of students living in out-of-home care situations are from ethnic minority and low socio-economic backgrounds, the odds of successful post-secondary transitions and degree attainment of this student population are further diminished. In addition to other risk factors related to

low college attendance, kinship care students are more likely to live in a single guardian home (Department of Health and Human Services, 2000)—another risk factor for low college attendance according to Horn (1997).

Poverty, student mobility, lack of knowledge, lack of guidance, attractiveness of the military, and lack of role models are factors influencing the post-secondary achievement of underrepresented, low-income, first-generation students (Ponterotto, 1990). Of these factors, student mobility is most common among students in all types of foster care environments (Altshuler, 1997).

Summary

It is estimated that by the year 2015, 42% of the United States population between ages 0-24 will be from minority groups (College Board, 1999c). Rapid demographic shifts are altering the composition of society. The white population is expected to decrease by 23% from 1990 to 2050, and all underrepresented groups are expected to increase—about half (approximately 49.4%) of the United States population will comprise individuals from diverse ethnic backgrounds (U.S. Bureau of the Census, 2000).

This literature review including data on increasing numbers of children of color who live in out-of-home care environments and significant changes in demographics supports the importance of examining the post-secondary achievement of underrepresented, low-income, first-generation and out-of-home care students. Nationally, this population of African American, Hispanic, and low-income students'

post-secondary achievement rates are disproportionately low compared to white, Asian, middle, and upper income students. Researchers have shown lack of higher education achievement is largely related to low-income levels, parental education level, and lack of other resources, including knowledge about post-secondary education. Other research on socio-political—societal, personal, cultural, familial, interactive, and political—issues related to school achievement and failure has identified lack of transmission of cultural capital, intentional resistance of dominated groups, lack of culturally responsive pedagogy, and unequally distributed school resources as powerful—though often hidden—forces contributing to the phenomenon of unequal educational achievement.

A college education is a cultural asset critical in social mobility (McDonough, 1997). Researchers have clearly shown racial and economic education achievement gaps. Students from first-generation college, low-income, and ethnic minority backgrounds are less likely to enroll and succeed in post-secondary education. Educational opportunity programs providing the support and pre-college preparation necessary to meet the needs of socio-economically disadvantaged students are a critical component in attaining equitable educational and subsequent improved life opportunities for these students.

Conclusion

The ongoing evaluation of the effectiveness of educational models and programs designed to promote increased post-secondary education opportunity and achievement among traditionally underrepresented and economically disadvantaged groups is paramount. Not only do continued federal funding and program replication depend on

evidence that these programs work, but program improvement depends on sound research leading to specific areas for program enhancement.

The literature shows a clear relationship between TRIO programs and increased post-secondary attendance of socially and economically disadvantaged groups. However, what has not been studied is where the “hemorrhaging” in the educational pipeline (Mortenson, 2000) is for low-income, first-generation, ethnic minority TRIO students from the time of high school completion to the first October/fall of college enrollment season. National studies—gathering data from longitudinal study samples such as the NELS database—tend to focus on enrollment within two years of high school graduation.

This study examined the immediate college continuation rates of TRIO students from the southwest region of the United States between the years 1991 and 2001. The time between high school completion and first fall college enrollment is a critical area of study because of its positive relationship to degree attainment. Findings of this study are also important because the U.S. Department of Education produces reports focusing on national-level enrollment data with limited information pertaining to immediate college continuation trends by region. Further, the southern region of the United States which includes four of the five states represented in this study—Texas, Louisiana, Arkansas, and Oklahoma—has been documented in the literature as having the lowest college participation rates for individuals of all racial backgrounds between the ages of 18 and 29 (Heller, 1999).

Many researchers have studied race and social class related to college enrollment, but more work is needed on immediate college continuation trends of disadvantaged

students served by pre-college programs such as TRIO. This study has helped to demonstrate the effectiveness of Southwest Region TRIO programs in preparing students for college enrollment, but has also illuminated a potential area for program improvement—implementation of strategies to increase program participants' immediate college continuation to increase likelihood of actual degree attainment.

Increased post-secondary education achievement among traditionally underrepresented and economically disadvantaged groups is only possible through maintenance, replication, and enhancement of existing federal TRIO programs. Sound research providing information on program participant outcomes related to post-secondary transition and degree attainment is needed. Chapter III discusses the research methodology and procedures used in the present study to examine TRIO student college continuation among recent TRIO high school graduates. An explanation of the instrument used in the data collection, research sample, statistical procedures, variables, and measurement is presented.

CHAPTER III

PROCEDURES AND METHODOLOGY

The specific methodological procedures used in analyzing the data in this study are reviewed in this chapter. This chapter contains eight sections. In section one an overview of the research focus and the instrument used in the data collection are described. In section two, the population of study is reviewed. Statistical procedures employed and research variables are discussed in sections three and four. Next, data collection and measurement of the variables are presented. Finally, research hypotheses, data analysis and study limitations are discussed. The results of these procedures are presented in Chapter IV.

The primary objectives of this study were to answer the following questions: 1) How do TRIO students from the southwest region of the United States compare to students on national and state levels in college continuation between the years 1991 - 2001, and 2) Among southwest region TRIO student participants from 1991 - 2001, is college continuation a function of race/ethnicity, income level, parental education/first-generation college status, and type of home-care environment?

The operational definition for race/ethnicity was African American, Hispanic, white, and other. For the gender variable, the operational definition was male or female. Socio-economic status/income was operationalized as low-income/non-first-generation

college, first-generation college/non-low-income, and low-income/first-generation college. First-generation college was operationalized as to whether at least one of the students' parents has a four-year college degree. Finally, the operational definition for type of home-care environment was in-home-care (lives with at least one biological parent) or out of home care (does not live with at least one biological parent).

Instrument Used in Data Collection: The Database

Data for this study were derived from an existing University of North Texas (UNT) TRIO Center for Student Development database consisting of information pertaining to post-secondary enrollment and achievement of UNT TRIO program participants (low-income, first-generation college, and underrepresented minority students—African American, Hispanic, Native American). For the purpose of gathering data from a regional sample of all TRIO education programs serving high school students (Upward Bound, Talent Search, and Upward Bound Math and Science), this study utilized existing data from the UNT Upward Bound Math and Science (UBMS) Regional Center between the years 1991 – 2001. The data included demographic and college continuation information for all low-income, first-generation, and underrepresented minority high school students served by UBMS Regional Center since its inception at UNT to present (from 1991 to 2001) who were eligible for college continuation (and/or completion) at the time of this study—prior to and including the 2001 academic year ($N=414$).

Comparison data for low-income and first-generation variables were gathered from the National Center of Education Statistics' annual Condition of Education. The National Center of Education Statistics publishes an annual report on immediate college transition of students by income and first-generation status using data from the U.S. Census Bureau Current Population Surveys, October Supplement, which provides national data on transition to college after high school graduation. The Condition of Education 2002 report from which comparison data for this study were gathered is published in detail on the NCES website at: [nces.ed.gov/ programs/coe/2002](http://nces.ed.gov/programs/coe/2002) (Tables 20-1, 20-2, and 20-3).

Gender and race comparison data were gathered from the Bureau of Labor and Statistics. Also using data from the U.S. Census Bureau Current Population Surveys, the Bureau of Labor and Statistics (BLS) publishes college continuation data annually for recent high school graduates by gender and race/ethnicity. This research unit does not publish data by income, however. A widely used source among those interested in the higher education achievement of ethnic minorities in the United States, the BLS provides analyses of college continuation data from 1959 to the present. Reports published by the BLS—including report numbers 94-252, 95-190, 96-152, 97-240, 89-171, 99-175, 00-136, 01-288, 02-288 used in this study—can be found on the BLS website: <http://www.bls.gov/opub/ted/archsubde.htm#Education%20and%20training>. Note: BLS does not publish other race continuation data. Therefore, comparison data for the other race category were derived from Postsecondary Education OPPORTUNITY (Mortenson, 2000a). Postsecondary Education OPPORTUNITY uses BLS data, but has a formula for

calculating other race continuation rates. The Postsecondary Education OPPORTUNITY newsletters are available at: <http://www.postsecondary.org> (Number 96—June, 2000).

Finally, the U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) collects data every two years on state college continuation rates. State college continuation comparison data for this study can be found on the NCES Digest for Education Statistics website at: <http://nces.ed.gov/pubs2002/digest2001/tables/dt204.asp>.

Sample Selection

The sample for the present study consisted of 414 Southwest Region TRIO participants served by the Upward Bound Math and Science Regional Center at the University of North Texas between the years 1991 – 2001 ($N=414$). This sample consisted of low-income, first-generation college, and underrepresented minority students served by UBMS since its inception at UNT to present (from 1991 to 2001) who at the time of this study were eligible for college continuation (and/or completion) prior to and including the 2001 academic year. Students included in the sample represent 26 high schools in the southwest region of the United States. Students included in the sample by state were: Texas ($n=275$), Arkansas ($n=30$), Oklahoma ($n=49$), New Mexico ($n=29$), and Louisiana ($n=31$).

Though the overwhelming majority of TRIO students were from low socio-economic backgrounds, the population of students served by TRIO programs was ethnically diverse including Hispanic, African American, white and other race students.

The sample included African American students ($n=56$), Hispanic students ($n=210$), white students ($n=122$) and other race students ($n=26$). Other race students included Asian, Native American and students who did not indicate race. Fewer males ($n=174$) than females ($n=240$) were included in the sample.

As TRIO federal guidelines state that a minimum of two-thirds of the participants must qualify as both low-income and first-generation college, a minimum of two-thirds of the sample population came from homes in which the family was low-income and neither parent had earned a four-year college degree. The sample included students who were low-income/non-first generation college ($n=21$), first generation college/non-low income ($n=46$), and a majority of students who were both low-income and first-generation college ($n=347$). The sample included a large number of students possessing the first-generation college characteristic ($n=393$) as well as a large number of students possessing the low-income characteristic ($n=368$).

All Upward Bound Math and Science students have participated in (and are recruited from) Educational Talent Search and Upward Bound programs in Arkansas, Louisiana, New Mexico, Oklahoma, and Texas—the five-state southwest region. Therefore, the sample included students recruited from Educational Talent Search programs throughout the region ($n=164$) and Upward Bound programs throughout the region ($n=250$).

Statistical Procedures

The statistical procedures utilized in this study were descriptive statistics, a test of proportions, and logistic regression. Descriptive statistics were used to compare TRIO students' college continuation rates with national and state rates of college continuation. A *z*-test of proportions was used to test for significant differences in college continuation rates between the sample and comparison group. Both descriptive statistics and logistic regression were used to make within sample comparisons based on race/ethnicity, gender, income, first-generation college status, and home-care environment.

Logistic regression, like other types of regression, specifies the effect that a particular independent variable (e.g., income-level) has on a dependent variable while controlling for other independent variables (Huck, 2000). Multiple regression allows for an assessment of all of the independent variables working together to influence the dependent variable (Borg & Gall, 1989) while logistic regression allows for the same but is appropriate for research models utilizing a dependent variable that is dichotomous in nature (Huck, 2000). The dependent variable, college enrollment, is dichotomous. There were two answers to the question of college continuation—"yes" the student enrolled by October of graduation year or "no" the student did not enroll. Therefore, logistic regression was the most appropriate statistical procedure. Further explanation of the appropriateness of logistic regression analysis is provided in the Data Analysis section of this chapter.

Variables

The variables included in this logistic regression analysis were based on the literature related to college continuation and post-secondary achievement and are operationalized on the data collected on TRIO program participants at the University of North Texas. By focusing on key variables identified in the literature (race/ethnicity, income, first-generation college status, gender) and variables unique to this data-set (home-care environment), this study examined the college continuation patterns of TRIO program participants in the southwest region of the United States.

Independent variables included race/ethnicity, income, gender, first-generation college status, and type of home-care environment. The dependent variable was college continuation. College continuation refers to enrollment in a post-secondary institution by October of the high school graduation year.

Data Calculation & Measurement of the Variables

Research Question One

In addressing the first research question—how do Southwest Region TRIO (SW TRIO) participants' college continuation trends compare to national and state trends for similar populations—descriptive statistics and a test of proportions were used to compare SW TRIO students' college continuation rates with national and state continuation rates for similar student populations. College continuation rates of SW TRIO students between the years 1991 and 2001 were compared among TRIO participants within the study sample and also compared to national rates for similar populations—low-income, first-

generation, male, female, African American, Hispanic, white, and other race students. SW TRIO students were then grouped by state and continuation rates of SW TRIO students by state were then compared to reported continuation rates of the respective states.

Procedures

The research tasks involved compiling an accurate list of UBMS participants served between 1991-2000 who were eligible for both high school graduation and college enrollment between Summer 1991 and October 2001. Directly from the UBMS database, students were sorted according to those eligible to have been enrolled in college by October 2001 ($n=414$). Summer 2001 UBMS program participants were automatically excluded because these students would be entering the junior or senior year of high school the following fall, and therefore, would not be eligible for high school graduation and college enrollment. June 2001 high school graduates were served the previous year in summer 2000. Federal regulations do not allow students to participate in the program after high school graduation. The list was then verified by the UBMS program director, Dr. Doug Elrod, who has worked with the program in some capacity for the last ten years.

From the list of study participants, a special query was run from the database to identify the following criteria for each participant: race/ethnicity, gender, TRIO eligibility (stating whether students were low-income income and/or first-generation), home state (Oklahoma, Arkansas, Texas, New Mexico, or Louisiana), “first-year enrollment” (listed

in the database this way; synonymous with college continuation), and overall post-secondary education status (whether or not the student ever enrolled in college).

Data from the special query was then imported into a statistical program for the social sciences. Once imported into the statistical software program, all variables for each study participant were coded with 0 or 1 according to the coding schemes described later in the chapter. Using the social sciences statistical program, a simple analysis of the data was conducted to verify participant numbers and sample distribution. Frequencies were used to double check the total number of students in the sample by race/ethnicity, gender, low-income, first-generation status, and home state. Frequencies were also run to determine the number of students in the sample who continued to college after high school graduation (first-year enrollment) and also the number of students who enrolled at some point after high school (post-secondary enrollment).

The social sciences statistical software was used to run descriptive analyses of the data. Crosstabulations (crosstabs) were run because crosstabs yield proportions. In the crosstabulation analysis, college continuation was entered as the “row” and each of the independent variables were entered separately as the “column.” The results of each procedure produced proportions of students by sub-sample who continued to college after high school over the total number. For example, to determine how many Hispanic students in the sample continued to college after high school graduation, college continuation was entered as the row and Hispanic was entered as the column. In this instance, the proportion yielded was 92/210 (43.8%). Of the 210 Hispanic students in the sample, 92 continued to college after high school graduation. Separate crosstabulation

procedures were run for each of the SW TRIO sub-samples (race/ ethnicity, gender, income, first-generation college status, state). Percentages from each subsample proportion were then calculated. The percentages for SW TRIO sub-samples (i.e. Hispanic students, female students, low-income students, or Arkansas students etc.) were then compared to the reported national and state comparison data for respective groups. As regional college continuation rates are not reported by the U.S. Department of Education, the southwest region college continuation rate for the period of study was calculated by adding the continuation rates for all five states and then dividing by five.

A z-test statistic—test of proportions—was calculated for each comparison (i.e. SW TRIO females compared to females nationally) to determine whether there was a significant difference in rates of college continuation between the two groups. The z-test formula is as follows:

$$Z = \frac{P - Q}{\sqrt{\frac{P \times Q}{n}}}$$

The z-statistic is computed by first subtracting the sample proportion (Q) from the population proportion (P). The result is then divided by the square root of the product of the population proportion and the sample proportion divided by the sample size (n). For example in the case of Hispanic Southwest Region TRIO students' college continuation compared to the population of Hispanic students nationally 43.8 (SW TRIO sample proportion) would be subtracted from 53.5 (nation population proportion). The result (9.7) is then divided by the square root of the product of 53.5 and 43.8 (2343.3) divided by the sample size (210). The z-statistic in this instance is 2.9. The z-test statistic was

compared against the set critical value to determine whether the null hypothesis would be rejected. In the present study the criterion for rejecting the null hypothesis was set at 0.01. Therefore, the critical value for the test statistic is 2.58. In the case of Hispanic students, for example, the *z*-test statistic—2.9—exceeded the critical value. Therefore, in this instance, the researcher failed to reject the null and the null hypothesis was retained.

Research Question Two

Dependent Variable - College continuation

In addressing the second research question—within the study sample, is college continuation a function of non-academic characteristics (independent variables) such as race/ethnicity, gender, income, parent education, and home-care type—college continuation served as the dependent variable. The college continuation variable was determined by whether or not a student enrolled in a post-secondary education program by October of the student's high school graduation year. Enrolled in a post-secondary institution by October of high school graduation year was recorded as a dichotomous variable with the value of 0 = yes/did enroll by October of high school graduation year and the value of 1 = no/did not enroll by October of high school graduation year.

The influence of independent variables on college continuation rates of TRIO participants was examined controlling for each of the independent variables. The logistic regression statistical procedure allowed for assessment of the pure relationship between the non-controlled independent variable and the dependent variable (Huck, 2000).

Logistic regression statistical procedures result in Odds Ratios (*OR*) indicating the

change in odds of a person being in one group (i.e., enrolled/not enrolled in post-secondary by October of high school year) based on a unit change in an independent variable.

Procedures

Research question two required the addition of another independent variable—home-care type—to the configured dataset. Once type of home-care environment was determined for each participant, the addition—and coding—of an additional variable for each of the study participants was relatively simple. Determining the type of home-care environment for each of the participants was more difficult. The federal government does not require programs to report numbers of students served by home-care type. Therefore, there was no category for home-care type in the UBMS database.

To determine home-care type for each of the study participants ($n=414$), individual student program files were accessed from storage file cabinets in the UBMS Director's office in Suite 204 of Highland Hall on the campus of UNT. The Upward Bound Math and Science application asks students and parents/guardians to list the primary guardian/parent and the relationship of the primary guardian/parent to the student. This line on the application was crosschecked with both program intake forms and school/counselor reference forms in an attempt to verify type of home-care environment. Of the 414 students in the sample, 15 students/guardians indicated clearly relationships other than "parental." Grandmother, uncle, foster mother, and sibling were sample responses. The program director, once again, verified the final list of students who were classified as having been in an out-of-home care environment when served by

the program. Only in cases where it was clearly documented that the student did not live with at least one biological parent, was the student recorded as out-of-home. However, in many instances type of home-care environment was difficult to ascertain and is one of the limitations of this study.

Using the same coded data set with the additional home-care variable, the researcher utilized the statistical software to run five separate logistic regression analyses to determine if the selected social and economic variables (race/ethnicity, gender, income, first-generation college status, and type home-care environment) were significant predictors of college continuation among the SW TRIO sample. The social sciences statistical program employed allowed the user to choose the type of regression analysis. Binary regression—logistic regression—was selected, college continuation was entered as the dependent variable, and the independent variables for each analysis were entered as categorical covariates (indicators). For example, in the case of the first logistic regression analysis (race/ethnicity), the covariates entered were Hispanic, other, Black, and white. In logistic regression analysis, the order in which covariates (indicators) are entered is important because the last covariate entered becomes the reference category to which all other covariates are compared. The last step in the race/ethnicity analysis as in all others, was indicating type of variables. All independent variables in the present study are categorical (not continuous) in nature. Therefore, categorical was selected and output was rendered.

For each logistic regression analysis in the present study, the reference category was the last independent variable/covariate (indicator) entered into the statistical model.

For example, in the logistic regression analysis testing whether income is a predictor of college continuation among SW TRIO students, college continuation was entered as the dependent variable—as in all other logistic regression analyses in this study—and low income was entered followed by non-low income. The same procedures were duplicated for gender, first-generation college, and home-care type.

To provide a more detailed picture of how SW TRIO students compare in college continuation by race, the descriptive analyses and *z*-test calculation procedures from research question one were duplicated. Southwest TRIO white students were compared to each of the other three student race categories (African American, Hispanic, and other). A *z*-test statistic was calculated for each comparison to determine whether there was a significant difference in college continuation rates of SW TRIO white students when compared to the other race groups.

Finally, the influence of home-care type in the college continuation of SW TRIO students was further examined using the descriptive procedures outlined in research question one. The same crosstabulation and *z*-test statistic procedures were followed. Crosstabulations yielded proportions of both in-home and out-of-home SW TRIO students who continued to college immediately after high school. Proportions were converted to percentages and a *z*-test statistic was calculated to determine whether there was a significant difference in college continuation between the two groups.

Coding of Independent Variables

Race/ethnicity

Race/ethnicity was defined as African American, Hispanic, white/non-Hispanic, and other. For the purpose of this study, race/ethnicity was coded as a dichotomous variable using dummy variables.

First-generation status

First-generation college status was coded as a dichotomous two-level variable using the same categories. This variable was coded with the value of 0 = non- first generation college/parent has four-year degree and the value of 1 = first-generation/parent does not have a four-year degree.

Income level

Income was coded as a dichotomous two-level variable using the same categories. Non-low income was coded with the value of 0 and low-income family background was coded with the value of 1.

Gender

For the purpose of this study, gender was coded as a two-level variable using the value of 0 = female and the value of 1 = male.

Home-care environment

Home-care environment, a variable unique to this post-secondary enrollment study, refers to whether a student lives with at least one biological parent. Home-care environment was not documented in the UBMS database. This variable was determined by examining University of North Texas UBMS participant application forms indicating

the relationship of the guardian to the student applicant. A TRIO—UBMS program—student who identified someone other than a mother or father as the primary guardian was coded as an out-of-home care TRIO participant. For the purpose of this study, home-care environment was coded as a dichotomous variable with the value of 0 = in-home care/lives with at least one biological parent and the value of 1 = out-of-home care/does not live with at least one biological parent.

Research Hypotheses

This study sought to determine whether the following hypotheses were supported by the aforementioned data. The study hypotheses were as follows:

Researcher's Hypotheses:

The first hypothesis was based on the first research question—how do SW TRIO students' college continuation rates between the years 1991 and 2001 compare with national and state college continuation rates for similar populations? The researcher hypothesized that:

Ho: 1 There is no significant difference in the college continuation rates between Southwest Region TRIO students and similar population students (i.e., income, first-generation college status, gender, race/ethnicity) nationally and at the state level.

Stated in the null, the first hypothesis was based on the literature—as outlined in chapter II—which shows Upward Bound participants having greater rates of entry to

post-secondary institutions and an increased likelihood of attending four-year higher education institutions (Mathematica, Inc., 1997; Burkheimer, Riccobono, & Wisenbaker, 1979). Previous studies have also reported Upward Bound as having a positive impact on educational aspirations, post-secondary education progress, and student persistence (Mathematica, Inc., 1999).

The second hypothesis was based on the second research question—among TRIO student participants in the southwest between the years 1991 and 2001, is college continuation a function of race/ethnicity, gender, income level, first-generation college status, and home-care environment? The researcher hypothesized that:

Ho: 2 College continuation rates among TRIO students from the southwest region between the years 1991 and 2001 are not a function of race/ethnicity, gender, income level, first-generation college status, and home-care environment.

Stated in the null, the second hypothesis was based on literature—as outlined in chapter II—indicating: 1) African American and Hispanic students are less likely to enroll in college than white students, 2) both low-income students and first generation students are less likely to enroll and achieve in higher education institutions, and 3) foster children often face difficulties which may result in change of schools more than once, truancy, and/or school failure.

Data Analysis

Logistic regression was an appropriate statistical technique for this study for the following reasons. First, regression analysis was appropriate because there are multiple independent variables that may have an effect on the dependent variable in this research study. Second, logistic regression is able to predict the probability that an observation belongs to the two levels of the dichotomous variable (Wright, 1995). Again, this is appropriate since the dependent variable in the research model is dichotomous—yes/no the student did enroll the fall/October after high school graduation. Third, logistic regression does not assume that the relationship between the dependent variable and the control variables is linear (Chatterjee & Price, 1991), thus eliminating some of the confining assumptions of other regression analysis models.

Logistic regression also provides explanatory power of each independent variable through use of the concept of odds; the odds ratio measures the strength of association between the independent variable(s) and the dependent variable (Huck, 2000). Finally, logistic regression deals with relationships among variables and can be used for prediction or explanation purposes. In the present study, the criterion for rejecting the null was set at the .01 level, $p < .01$. The critical value for the test statistic was +2.58. According to Cabrera (1994) if the critical-p value is less than 0.01, then its value is significant and the model and the data are a good fit. Further, the calculation of the delta-p statistic is recommended for the reporting of significant variables in logistic regression statistical models as it offers a reader-friendly way of reporting and interpreting those variables proving significant in the logistic regression output (Cabrera, 1994).

Limitations of the Study

There are many limitations to this study. First, the study is from a select group of TRIO participants from the southwest region of the United States and does not allow for generalizability (Bateman, 1990) outside of this region. Further, the majority of student participants served at the University of North Texas TRIO Center are residents of Texas ($n=275$); there is a chance of limited generalizability outside of the state. Although the study sample was representative of the southwest region, the TRIO sub-samples by state were small in number compared to Texas: Arkansas ($n=30$), Louisiana ($n=31$), New Mexico ($n=29$), Oklahoma ($n=49$).

Second, this study only examines post-secondary enrollment by October of the student's high school graduation year (college continuation). It does not take into account students who enroll but drop out or withdraw within a short amount of time. College attendance and high school completion rates—clearly related to post-secondary achievement—were high for the study sample. Eventual college attendance was reported and discussed, but was not a focus of this study.

Third, with respect to out-of-home care placement, students and parents do not always report a change in care environment. Considering documented student demographic data only, it was difficult to discern actual numbers of students living in out-of-home environments. Therefore, the out-of-home care sub-sample was small ($n=15$). Despite these inherent study limitations, this study does offer implications for practice.

Fourth, this study does not take into account other factors that may influence college continuation such as GPA, language differences, college track, and employment obligations. Eighty-nine percent of the study sample was low-income. Certainly work obligations after or during high school may have influenced college continuation after high school.

The final, and maybe most important, limitation concerns the national comparison groups for college continuation by race, gender, state and first-generation status. Percentage of low-income students among the comparison population was unknown. The United States Department of Labor and Statistics does not publish immediate college continuation rates according to multiple variables. For example, income-level and race together (i.e. low-income Hispanics), income and gender together (i.e. low-income females), and income and first-generation status together (i.e. continuation rates for students who are both low-income and first-generation) are not reported. The immediate college continuation data available is published by single variables only (i.e. male, female, African American, low-income, middle income, first-generation, etc.). If immediate transition data on individuals with combination variables (i.e. low-income whites) is collected in the October Supplement of the United States Census Current Population Surveys, it is not published or available.

The fact that the income-level of the majority of the national comparison groups was unknown is important because the vast majority (89%) of the study sample was low-income. Therefore, it is difficult to ascertain the true impact of SW TRIO program participation (between 1991- and 2001) on the college continuation of certain low-

income race or gender groups when compared to respective national low-income race and gender groups. Again, comparison groups for the race, gender, first-generation and state categories were all-income level groups (i.e., all-income level African Americans, all-income level females, all-income level first-generation college students, all-income level students from Texas etc.).

Despite the stated limitations, the present study presents implications for both policy and practice concerning the preparation of underrepresented and disadvantaged students for academic achievement and success beyond the high school years. To date, no studies were identified that had examined immediate college continuation trends of TRIO in the southwest region. Further, home-care environment and its relationship to college continuation among TRIO population students had not been studied. Finally, there is a need for continued research documenting the success of education opportunity programs for the purpose of sustained support and school reform. Expanded knowledge and research-informed pedagogical practices are needed to support the achievement of disadvantaged students and promote social justice in today's diverse classrooms.

Findings showing the benefits of the present study outweigh the inherent study limitations are presented in the next chapter of the dissertation. Chapter IV of this study provides the results of the statistical analysis, an explanation and discussion of findings, and implications for practice.

CHAPTER IV

FINDINGS AND DISCUSSIONS

The purpose of this study was to answer the following questions: 1) How do TRIO students from the southwest region of the United States compare to similar population students on a national and state level in college continuation between the years 1991 -2001, and 2) Among Southwest Region TRIO student participants from 1991 – 2001, is college continuation a function of race/ethnicity, gender, income, first-generation college status, and type of home care environment? This chapter presents the results of the study.

For research question one, descriptive statistics—crosstabulations—were used to provide data about Southwest Region TRIO students' college continuation rates compared to national rates of college continuation (as reported for years 1991-2001 by the National Center for Education Statistics (NCES), the Bureau of Labor and Statistics, and the Digest of Education Statistics) for similar populations within the same time period. As a group, this sample of Southwest Region TRIO students ($n=414$) continued to college immediately after high school at a rate of 44% (184/414). Eventual college attendance for the group was much higher at 82% (341/414). As slightly less than half of the sample continued to college immediately after high school, and over 80% of the sample eventually enrolled in college, the data yielded from this study provide documentation of Southwest Region TRIO program success in preparing some socio-economically disadvantaged students for college enrollment. However, study findings

suggest the need for enhanced TRIO program components to increase programmatic support for immediate transition to college after high school completion.

For research question two, logistic regression and descriptive statistics—crosstabulations—were used to provide data about differences in college continuation among Southwest Region TRIO participants between the years 1991 – 2001. Logistic regression was used to determine whether college continuation among Southwest Region TRIO participants between the years 1991-2001 was a function of race/ethnicity, gender, income, first-generation college status, and type of home care environment. A z-test was calculated to determine whether individual groups within the Southwest Region TRIO sample (group comparisons by race, state, and home-care environment) significantly differed from each other. The outcomes of the logistic regression procedure are discussed in terms of the independent variables' influence on college continuation—specifically, whether the independent variables (gender, race, family income level, parent education, type of home care environment) are predictors of college continuation.

Presentation of Findings

Two hypotheses and 15 sub-hypotheses were tested. The hypotheses were stated in the null form and the probability level for testing hypotheses was established at the 0.01 level of significance, critical value 2.58. The findings for each of the two hypotheses and 15 sub-hypotheses are discussed in the second part of this chapter, Discussion of the Findings.

Research Question One: How do TRIO students from the southwest region of the United States (SW TRIO) compare to similar population students on a national and state level in college continuation between the years 1991 -2001?

Descriptive statistics and a z-test (test of proportions to indicate whether the study sample is significantly different from the comparison group—the national estimates as reported by NCES, the Bureau of Labor and Statistics, and the Digest of Education Statistics) were used to test the first hypothesis:

Hypothesis 1

Ho: 1 There is no significant difference in the college continuation rates between Southwest Region TRIO students and similar population students (i.e., income, first-generation college status, gender, race/ethnicity) nationally.

Hypothesis 1 serves as a general hypothesis providing a framework for the formulation, development, and results of thirteen sub-hypotheses (Sub-hypotheses 1A – 1M) reported below.

Shown in Table 2, low-income SW TRIO students did not continue to college at significantly different rates from low-income students nationally. Also shown in Table 2, the statistical analysis produced results indicating that first-generation college, male and female Southwest Region TRIO participants continue to college at significantly lower rates than first-generation, male and female students of all income levels nationally. African American SW TRIO students did not continue to college after high school at significantly different rates from African American students of all-income levels

nationally while white, Hispanic, and other race students did continue to college at significantly lower rates than white, Hispanic, and other race students nationally.

An examination of the data by state produced evidence of significantly lower rates of college continuation for both Texas and Arkansas Southwest Region TRIO participants when compared to all-income high school students in Texas and Arkansas respectively.

New Mexico, Oklahoma, and Louisiana SW TRIO students continued at rates not significantly different than all-income students in the respective states.

Table 2

Southwest TRIO (SW TRIO) College Continuation Rates Compared to National College
Continuation Rates 1991 – 2001

Independent Variable	Nation Estimated %	SW TRIO Sample size/%	z-test statistic	Significance
			$Z = \frac{P - Q}{\sqrt{\frac{P \times Q}{n}}}$	
Low-income	44.2	368/43.7	0.197	Not significant
First-generation	52.6	393/44.0	3.55	p<.01
Male	60.8	174/40.0	5.58	p<.01
Female	65.9	240/47.5	5.09	p<.01
Hispanic	53.5	210/43.8	2.90	p<.01
White	64.3	122/45.1	3.93	p<.01
African American	54.3	56/48.2	0.89	Not significant
Other race	74.5*	26/38.5	3.43	p<.01
Texas	52.1	275/42.9	3.23	p<.01
Oklahoma	49.6	49/42.9	1.02	Not significant
Louisiana	56.2	31/54.8	0.140	Not significant
Arkansas	49.8	30/26.7	3.47	p<.01
New Mexico	56.0	29/68.9	1.12	Not significant
SW Region	52.7	414/47.2	0.915	Not significant

Note. National comparison data from: NCES, 2002; U.S. Bureau of Labor and Statistics, 1991-2001; Digest of Education Statistics, 2002; *PEO (2000).

Sub-hypothesis 1A

Ho: 1A There is no significant difference between college continuation rates of low-income Southwest Region TRIO (SW TRIO) participants and college continuation rates of low-income students nationally.

Test of sub-hypothesis 1A - College continuation by Low-income status. A subsample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=368$) was compared to the national average as reported by the National Center for Education Statistics (2002) for the years 1991-2001. Result of z-test statistic, $z=.197$, statistically significant. The test statistic does not exceed the critical value (2.58). Therefore, the probability that results are due to sampling error is not less than 0.01. The result is not statistically significant.

There was no statistically significant difference between groups for sub-hypothesis 1A. Therefore, the researcher was not able to reject the null hypothesis that there would be no statistically significant difference between college continuation rates of low-income Southwest Region TRIO participants and college continuation rates of low-income students nationally. Low-income TRIO student college continuation rates between the years 1991 and 2001 (161/368–43.7%) are not significantly different from the college continuation rates of low-income students nationally (44.2%).

Sub-hypothesis 1B

Ho: 1B There is no significant difference between the college continuation rates of first-generation college Southwest Region TRIO participants and the college continuation rates of first-generation college students nationally.

Test of Sub-hypothesis 1B - College Continuation by Parent Education/First Generation College Status. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=393$) was compared to the national average as reported by the National Center for Education Statistics (2002) for the years 1991-2001. Result of z-test statistic, $z=3.55$, $p<.01$.

There was a statistically significant difference ($p<.01$) for sub-hypothesis 1B. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically significant difference between the college continuation rates of first generation college students nationally and college continuation rates of first-generation college SW TRIO participants between 1991-2001. First generation SW TRIO students of all income levels continue to college at significantly lower rates (173/393—44.0%) than first-generation college students from all income levels nationally (52.6%).

Sub-hypothesis 1C

Ho: 1C There is no significant difference between the college continuation rates of male Southwest Region TRIO participants and the college continuation rates of male students nationally.

Test of Sub-hypothesis 1C - College Continuation by Gender – Male. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=174$) compared to the national average as reported by the National Center for Education Statistics (2002) for the years 1991-2001. Result of z-test statistic, $z=5.58$, $p<.01$.

There was a statistically significant difference ($p<.01$) for sub-hypothesis 1C. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically significant difference between the college continuation rates of male students nationally and college continuation rates of SW TRIO male participants between 1991-2001. SW TRIO male participants of all income levels continue to college at significantly lower rates (70/174-40.0%) than male students from all income levels nationwide (60.8%).

Sub-hypothesis 1D

Ho: 1D There is no significant difference between the college continuation rates of female Southwest Region TRIO participants and the college continuation rates of female students nationally.

Test of Sub-hypothesis 1D - College Continuation by Gender – Female. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=240$) was compared to the national average as reported by the National Center for Education Statistics (2002) for the years 1991-2001. Result of z -test statistic, $z=5.09$, $p<.01$.

There was a statistically significant difference ($p<.01$) for sub-hypothesis 1D. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically significant difference between the college continuation rates of female students nationally and college continuation rates of SW TRIO female participants between 1991-2001. SW TRIO female participants of all income levels continue to college at significantly lower rates (114/240–47.5%) than female students from all income levels nationally (65.9%).

Sub-hypothesis 1E

Ho: 1E There is no significant difference between the college continuation rates of Hispanic Southwest Region TRIO participants and college continuation rates of Hispanic students nationally.

Test of Sub-hypothesis 1E - College Continuation by Race-Hispanic. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=210$) was compared to the national average as reported by the National Center for Education Statistics (2002) for the years 1991-2001. Result of z -test statistic, $z=2.90$, $p<.01$.

There was a statistically significant difference ($p < .01$) for sub-hypothesis 1E. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically significant difference between the college continuation rates of Hispanic students nationally and college continuation rates of Hispanic Southwest Region TRIO participants between 1991-2001. As a group, Southwest Region TRIO Hispanic participants—94% low-income—continue to college at significantly lower rates (92/210=43.8%) than Hispanic students from all income levels nationwide (53.5%).

Sub-hypothesis 1F

Ho: 1F There is no significant difference between the college continuation rates of white/non-Hispanic Southwest Region TRIO participants and college continuation rates of white/non-Hispanic students nationally.

Test of Sub-hypothesis 1F - College Continuation by Race – White. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=122$) was compared to the national average for white/non-Hispanic as reported by NCES (2002) for the years 1991-2001. Result of z -test statistic, $z=3.93$, $p < .01$. The test statistic exceeds the critical value (2.58). Therefore, the probability that the results are due to sampling error is less than 0.01, $p < .01$.

There was a statistically significant difference between groups for sub-hypothesis 1F. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically significant difference between the college continuation rates of white/non-

Hispanic students nationally and college continuation rates of white/non-Hispanic Southwest Region TRIO participants between 1991-2001. Southwest Region TRIO white/non-Hispanic participants continue to college at significantly lower rates (55/122–45.0%) than white/non-Hispanic students nationally (64.3%).

Sub-hypothesis 1G

Ho: 1G There is no significant difference between the college continuation rates of African American Southwest Region TRIO participants and college continuation rates of African American students nationally.

Test of Sub-hypothesis 1G - College Continuation by Race – African American.

A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=56$) compared to the national average as reported by the National Center for Education Statistics (2002) for the years 1991-2001. Result of z -test statistic, $z=.89$, not statistically significant. The test statistic does not exceed the critical value (2.58). Therefore, the probability that the results are due to sampling error is greater than 0.01, $p>.01$.

There was no statistically significant difference between groups for sub-hypothesis 1G. Therefore, the researcher failed to reject the null hypothesis that there would be no statistically significant differences between the college continuation rates of African American students nationally and college continuation rates of African American Southwest Region TRIO participants between 1991-2001. Southwest Region TRIO African American participants of all-income levels—91% low-income, however—do not

continue to college at significantly lower rates (27/56 – 48.2%) than African American students from all income levels nationwide (54.3%).

Sub-hypothesis 1H

Ho: 1H There is no significant difference between the college continuation rates of other race Southwest Region TRIO participants and college continuation rates of other race students nationally.

Test of Sub-hypothesis 1H - College Continuation by Race – Other Race. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=26$) was compared to the national average as reported in Postsecondary Education OPPORTUNITY, June 2000. Result of z -test statistic, $z=3.43$, statistically significant. The test statistic exceeds the critical value (2.58). Therefore, the probability that the results are due to sampling error is less than 0.01, $p<.01$.

There was a statistically significant difference between groups for sub-hypothesis 1H. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically significant differences between the college continuation rates of other race students nationally and college continuation rates of other race Southwest Region TRIO participants between 1991-2001. Southwest Region TRIO other race participants of all income levels continue to college at statistically significant lower rates (10/26-38.5%) than other race students from all income levels nationwide (74.5%).

Sub-hypothesis 1I

Ho: 1I There is no significant difference between college continuation rates of Southwest Region TRIO participants from Texas and the college continuation rates of all eligible high school students from Texas.

Test of Sub-hypothesis 1I - Continuation by State – Texas. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=275$) compared to the state average as reported by NCES. Result of z -test statistic, $z=3.23, p<.01$.

There was a statistically significant difference between groups for sub-hypothesis 1I. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically significant differences between the college continuation rates of high school students from Texas and the college continuation rates of Southwest Region TRIO participants from Texas. Southwest Region TRIO participants of all income levels from Texas continue to college at significantly lower rates ($118/275=42.9\%$) than other eligible high school students from Texas of all income levels (52.1%).

Sub-hypothesis 1J

Ho: 1J There is no significant difference between college continuation rates of Southwest Region TRIO participants from Oklahoma and the college continuation rates of all eligible high school students from Oklahoma.

Test of Sub-hypothesis 1J - College Continuation by State – Oklahoma. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=49$) compared to the state average as reported by the National Center for Education Statistics Digest of Education Statistics. Result of z-test statistic, $z=1.02$, not statistically significant.

There was no statistically significant difference between groups for sub-hypothesis 1J. Therefore, the researcher failed to reject the null hypothesis that there would be no statistically significant differences between the college continuation rates of high school students from Oklahoma and the college continuation rates of Southwest Region TRIO participants from Oklahoma. Southwest Region TRIO participants of all income levels from Oklahoma do not continue to college at significantly higher rates (21/49–42.9%) than other eligible high school students from Oklahoma of all income levels (49.6%).

Sub-hypothesis 1K

Ho: 1K There is no significant difference between college continuation rates of Southwest Region TRIO participants from Louisiana and the college continuation rates of all eligible high school students from Louisiana.

Test of Sub-hypothesis 1K - College Continuation by State – Louisiana. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=31$) compared to the state average as reported by NCES. Result of z-test statistic, $z=.104$, not statistically significant.

There was no statistically significant difference between groups for sub-hypothesis 1K. Therefore, the researcher failed to reject the null hypothesis that there is no statistically significant difference between the college continuation rates of high school students from Louisiana and the college continuation rates of Southwest Region TRIO participants from Louisiana. Southwest Region TRIO participants of all income levels from Louisiana do not continue to college at significantly different rates (17/31-54.8%) than other eligible high school students from Louisiana of all income levels (56.2%).

Sub-hypothesis 1L

Ho: 1L There is no significant difference between college continuation rates of Southwest Region TRIO participants from Arkansas and the college continuation rates of all eligible high school students from Arkansas.

Test of Sub-hypothesis 1L - College Continuation by State – Arkansas. A subsample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=30$) compared to the state average as reported by NCES. Result of z -test statistic, $z=3.47$, $p<.01$.

There was a statistically significant difference for sub-hypothesis 1L. Therefore, the researcher was able to reject the null hypothesis that there would be no statistically

significant difference between the college continuation rates of high school students from Arkansas and the college continuation rates of Southwest Region TRIO participants from Arkansas. Southwest Region TRIO participants from Arkansas continue to college at statistically significant lower rates (8/30–26.6%) than high school students from Arkansas of all income levels (49.8%).

Sub-hypothesis 1M

Ho: 1M There is no significant difference between college continuation rates of Southwest Region TRIO participants from New Mexico and the college continuation rates of all eligible high school students from New Mexico.

Test of Sub-hypothesis 1M - College Continuation by State – New Mexico. A sub-sample of Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=29$) compared to the state average as reported by NCES. Result of z -test statistic, $z=1.12$, not statistically significant.

There was no statistically significant difference for sub-hypothesis 1M. Therefore, the researcher was not able to reject the null hypothesis that there would be no statistically significant difference between the college continuation rates of high school students from New Mexico and the college continuation rates of Southwest Region TRIO participants from New Mexico. Southwest Region TRIO participants of all income levels from New Mexico do not continue to college at significantly different rates (20/29-68.9%) from high school students from New Mexico of all income levels (56.0%).

Note: Considering the average college continuation rate of the five-state region (52.7%) between the years 1991-2001, Southwest Region TRIO students—89% low-income—continued to college at a rate (47.2%) not significantly different ($z=.915$) from the college continuation rate for all-income students in the southwest region. The regional continuation rate was determined by calculating the average of all five states' college continuation rates during 1991-2001. The regional continuation rate (52.7%) was compared to the average continuation rate of SW TRIO participants' by state (47.2%) during the same time period. Therefore, a majority low-income Southwest Region TRIO population continued to college at par with students of all income levels throughout the southwest region.

Next, the researcher examined within sample differences in college continuation and created a statistical model to determine which if any independent variables (race, income, first/generation college status/parent education, gender, homecare environment) are predictors of college continuation among Southwest Region TRIO participants.

Logistic regression, descriptive statistics, and a test of proportions were used to test the second hypothesis:

Ho: 2 College continuation rates among TRIO students from the southwest region is not a function of race/ethnicity, gender, income level, first-generation college status, and home-care environment.

The statistical model produced no statistically significant predictor variables (Table 3). $\text{Exp}(B)$ represents the odds ratio indicating the independent variables' influence on an increased or decreased likelihood of an expected event or occurrence. In the present statistical model, the expected event/occurrence is college continuation. $\text{Exp}(B)$ refers to the beta weights for each independent variable which describe the change in log odds associated with a one-unit change in a specific independent variable (Cabrera, 1994). If the critical- p value is less than 0.01, then its value is significant and the model and the data are a good fit (Cabrera, 1994). Significance (Sig.) levels indicate no statistical significance for each of the independent variables. Therefore, the researcher failed to reject the null hypothesis that among Southwest Region TRIO participants from 1991-2001, college continuation is not a function of race/ethnicity, gender, income level, first-generation college status, and home-care environment. These independent variables are not reliable predictors of college continuation.

Table 3

Output of Logistic Regression Procedure - Effects of Income, Parent Education, Race, Gender, and Home Care Environment on College Continuation of Southwest TRIO Participants

Variables in the Equation	<i>B</i>	Standard Error	Significance	Exp(<i>B</i>) Odds Ratio
Hispanic	-.052	.229	.822	.950
Other	-.273	.442	.538	.761
African American	.126	.323	.697	1.134
Female	.296	.202	.142	1.344
Low	.336	.449	.454	1.399
First	.251	.313	.422	1.286
Outhome	.370	.527	.483	1.448

Note. Variable(s) entered in the logistic regression statistical model: Hispanic, other, African American, white, Female, Male, Low-income, Non-low-income, First-generation, Non-first-generation, Out-home (out-of-home care), and In-home (in-home care). Comparison variables are the last variables for each category entered into the statistical model and are not displayed in the output table. Comparison variables (for race, gender, income, first-generation, and home-care environment) in this statistical model were: white, male, non-low-income, non-first-generation, and in-home respectively.

Results of the logistic regression indicate that among SW TRIO participants from 1991-2001, college continuation is not a function of race/ethnicity (Hispanic, $p < .822$; other, $p < .538$; African American, $p < .697$), gender (female, $p < .142$), income level (Low, $p < .454$), first-generation college status (First, $p < .422$), and home-care environment (Out-home, $p < .483$). Therefore, among SW TRIO participants between 1991-2001, race/ethnicity, gender, income level, first-generation college status, and home-care environment are not reliable predictors of college continuation. A delta- p statistic was not calculated as none of the variables in the model proved significant. According to Cabrera (1994), calculation for the delta- p statistic is recommended for those variables found significant in the logistic regression analysis.

Further examination of college continuation among SW TRIO students by race and home-care type resulted in one area of significance. As shown in Table 4, descriptive statistics yielded results indicating no significant difference for college continuation by race when compared to white SW TRIO students. However, home-care type was statistically significant.

Table 4

Within Southwest Region TRIO (SW TRIO) Sample Comparisons of College

Continuation by Race and Home-care Type

Race/Type of Home-care Environment	SW TRIO Sample size/%	z-test statistic	Significance
		$Z = \frac{P - Q}{\sqrt{\frac{P \times Q}{n}}}$	
Hispanic vs. white	210/43.8	.542	Not significant
African Amer. vs. white	56/48.2	.886	Not significant
Other race vs. white	26/.385	1.94	Not significant
Out-of-home vs. In-Home	15/53.3 399/44.1	3.83	p<.01

Note. White SW TRIO students (122/45.1%) served as the comparison for race.

Hypothesis 2 served as a general hypothesis providing a framework for the formulation, development, and results of two sub-hypotheses for comparison of college continuation by race and home-care type (sub-hypotheses 2A – 2B). Results of sub-hypotheses are reported below.

Sub-hypothesis 2A - Within Sample Comparison of SW TRIO Participants'

College Continuation by Race.

Ho: 2A Among SW TRIO participants between 1991-2001, there will be no difference between white students' college continuation rates and the college continuation rates of African American, Hispanic, and other race (racial backgrounds other than white/non-Hispanic, African American, and Hispanic) students.

Test of Sub-hypothesis 2A

Figure 1. Comparison of SW TRIO Participants' College Continuation by Race

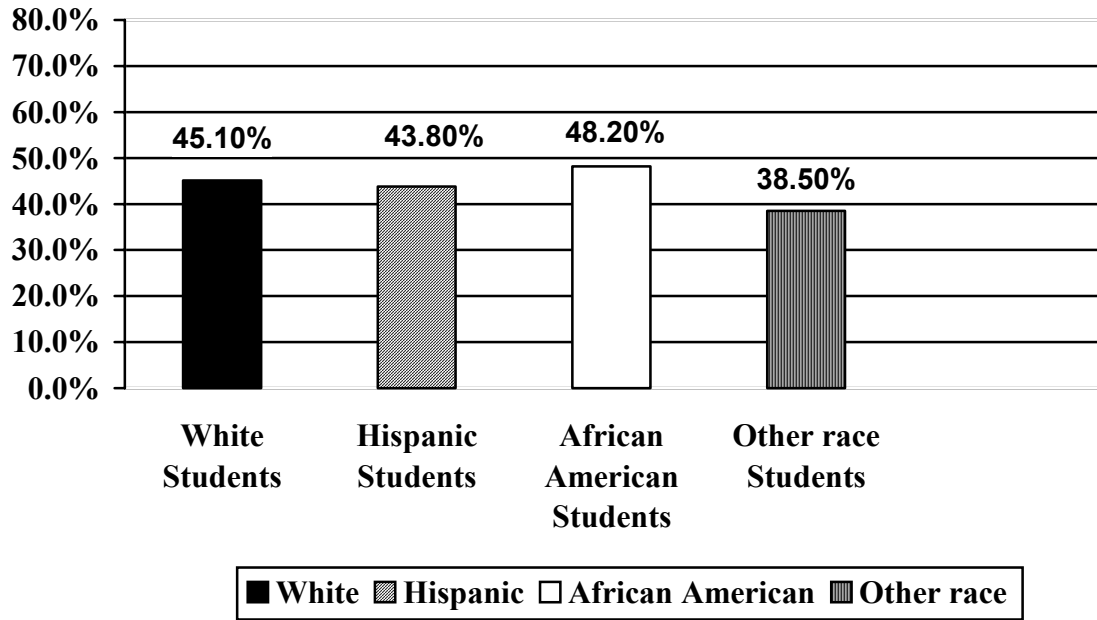


Figure 1. Comparison of SW TRIO Participants' College Continuation by Race.

College continuation of Hispanic ($n=210$), African American ($n=56$), and other race ($n=26$) Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 compared to college continuation of white Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=122$). Hispanic college continuation compared to white college continuation, $z=.542$, not statistically significant; African American college continuation compared to white college continuation, $z=.886$, not statistically significant; Other race college continuation compared to white college continuation, $z=1.94$, not statistically significant.

The researcher was not able to reject the null hypothesis that among SW TRIO participants between 1991- 2001, there is no difference between white students' college continuation rates and the college continuation rates of African American, Hispanic, and Other race students.

Sub-hypothesis 2B - Comparison of SW TRIO Participants' College Continuation by Home-Care Environment.

Ho: 2B Among SW TRIO participants between 1991-2001, there will be no difference between the college continuation rates of in-home care environment students and the college continuation rates of out-of-home care environment students.

Test of Sub-hypothesis 2B

Figure 2. SW TRIO Participants' College Continuation by Home-Care Type

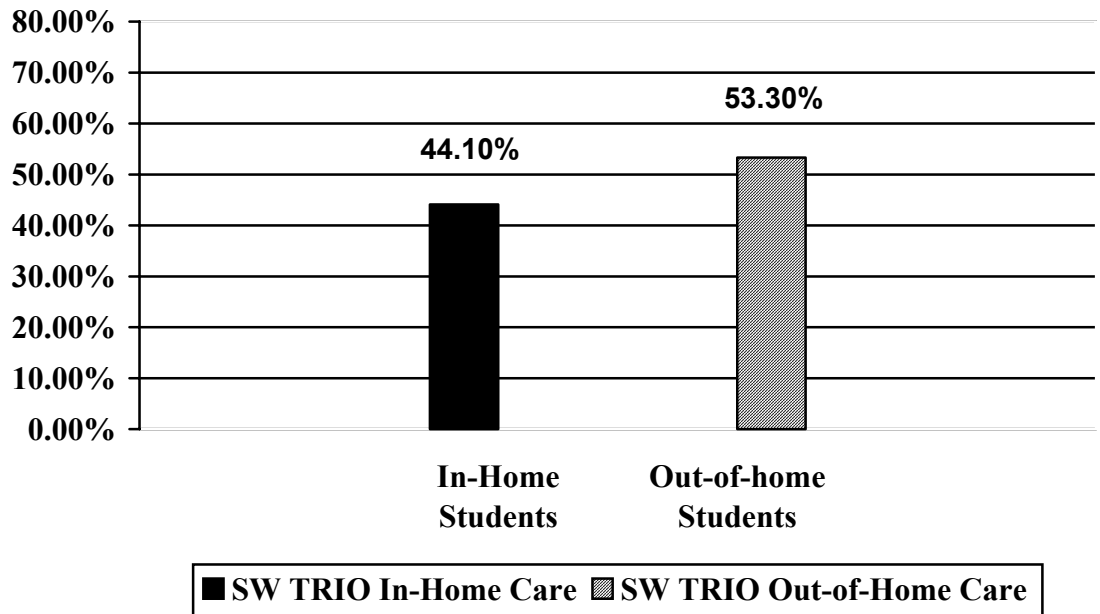


Figure 2. Comparison of SW TRIO Participants' College Continuation by Home-care Type. Southwest Region TRIO participants/UNT Upward Bound Math and Science 1991-2001 ($n=414$) college continuation rates were compared by home care type. In-home care environment students ($n=399$) compared to out-of home care environment students ($n=15$). In-home care environment students' college continuation ($176/399=44.1\%$) compared to out-of-home care environment college continuation ($8/15=53.3\%$) resulted in a z-test statistic of 3.60, $z=3.60$. The result is statistically significant, $p<.01$.

There was a statistically significant difference ($p<.01$) for sub-hypothesis 2B. Therefore, the researcher was able to reject the null hypothesis that there would be no

statistically significant difference between the college continuation rates of in-home care environment students and the college continuation rates of out-of-home care environment students among Southwest Region TRIO participants between 1991-2001. Southwest Region TRIO out-of-home care environment students continue to college at statistically significantly higher rates (8/15–53.3%) than in-home care environment students (176/399-44.1%).

Discussion of Findings

Solely on the basis of this study, it is difficult to be certain about the factors related to lower rates of college continuation of first-generation, male, and female, Southwest Region TRIO participants between 1991-2001 when compared to the college continuation rates of first-generation, male, and female populations nationally. What is important to note is that Southwest Region TRIO participants as a whole—89% low-income—continued to college at rates (47.2%) not significantly different ($p < .01$) from the college continuation rates (52.7%) of all southwest region students of all income levels during the years 1991-2001.

Although the study did not provide evidence of Southwest Region TRIO students' college continuation at significantly higher rates when compared to similar population students nationally and at the state level, the study did produce data to add to the existing body of literature on TRIO student post-secondary education and issues related to higher education of the poor in the United States, particularly that Southwest Region TRIO students are continuing college at rates not significantly different from all-income

students in the region. Another important finding, African American students in the SW TRIO sample—91% low-income—continued to college at rates (48.2%) not significantly different from all-income African American students nationally (54.3%).

This section provides a discussion of the study findings according to each of the two major research hypotheses and fifteen sub-hypotheses. Interpretations of findings, relationship of current study to prior research, study limitations, and implications for theory and practice are offered.

Hypothesis 1/Sub-hypotheses 1A – 1M

Ho: 1 There is no significant difference in the college continuation rates between Southwest Region TRIO students and similar population students (i.e., income, first-generation college status, gender, race/ethnicity) nationally.

Discussion of this hypothesis is provided in detail according to each of the following thirteen sub-hypotheses.

Sub-hypothesis 1A

Ho: 1A There is no significant difference between college continuation rates of low-income Southwest Region TRIO participants and college continuation rates of low-income students nationally.

An unexpected finding, the present study did not produce evidence that low-income SW TRIO students between the years 1991 - 2001 continued to college at significantly different rates from low-income students nationally. Considering the college

preparation, tutoring, mentorship, assistance with college applications, financial aid application assistance, and college visitations provided through participation in high school TRIO programs, the researcher expected to find higher rates of college continuation for low-income SW TRIO students compared to low-income students nationally.

One possible explanation of why SW TRIO students did not continue at higher rates than low-income students nationally might be the high percentage of low-income SW TRIO students who were both low-income and first-generation college (347/368–94%). The proportion of the comparison group—low-income students nationally—who were both low-income and first-generation college was unknown. Ninety-four percent of the SW TRIO sample possessing an additional non-academic characteristic related to college continuation—first-generation status—may have contributed to lower rates of continuation when compared to low-income students nationally. Previous studies have shown both low-income status and first-generation college status to result in lower rates of college continuation (Mortenson, 2001; Warburton et al., 2001). The present study supports these earlier findings. Low-income SW TRIO students in this study continued to college immediately after high school at rates not significantly different from all low-income students nationally.

Further, low-income status alone has been related to lower rates of overall post-secondary attendance (Akerhielm et al., 1998). Interesting to note although outside of the focus of the present study, the study also produced evidence indicating that low-income SW TRIO students did attend college at higher rates (301/368–82%) when compared to

the college attendance rates of low-income students nationally (44%) as reported in a national longitudinal study by Akehielm et al., (1998). Three hundred-one of three hundred sixty-eight SW TRIO students attended college whether immediately after high school—October after high school graduation—or at a later time between the years 1991 and 2001. This is relevant to the present study because TRIO program goals are to increase higher education opportunities and degree attainment among socially and economically disadvantaged groups.

Given that 84% of the low-income SW TRIO students had an additional non-academic trait negatively associated with immediate post-secondary continuation and achievement—first-generation college status—results showing these students at par with the low-income population nationally in college continuation is encouraging. Further, this southwest regional, majority low-income sample was compared to national averages for college continuation. The national college continuation average includes states having higher overall college continuation rates. The southwest region of the United States has lower college continuation rates than other regions in the country. For example, college continuation rates are higher in the Eastern region states such as Massachusetts (71.5%), New York (71.3%), New Jersey (68.8%), Rhode Island (67.8%), and Connecticut (64.9%). This sample included students from the southwest region only where college continuation rates are considerably lower (Texas 52.1%, Oklahoma - 49.6%, New Mexico - 56.0%, Arkansas - 49.8%, and Louisiana - 56.2%). One possible explanation for higher college continuation rates in northeastern states compared to southern/southwestern states is lower child poverty rates in those states. Northeastern region states

have lower percentages of students participating in free lunch programs (Mortenson, 1998). For example, in 1997, 23% of all students in the state of Massachusetts qualified for and received free lunch compared to 42.2% of all students in the state of Texas in the same fiscal year.

Sub-hypothesis 1B

Ho: 1B There is no significant difference between the college continuation rates of first-generation college Southwest Region TRIO participants and the college continuation rates of first-generation college students nationally.

The present study found first-generation college students nationally continue to college at significantly higher rates than first-generation SW TRIO students. As national data for students possessing both the low-income and first-generation characteristics were not available, comparison data included first-generation college, all income levels. It is important to note the SW TRIO first-generation sub-sample included a population of students that possessed both nonacademic characteristics of first-generation and low-income (84%).

Considering a highly probable imbalance according to income-level, the researcher's interpretation of the significant findings on lower continuation rates by first-generation college status is that the findings are consistent with literature suggesting income-level is the most influential factor in determining college participation (Akerhielm et al., 1998; Ottinger, 1991) and low-income students, when compared to students from higher income backgrounds, are less likely to continue to college by

October of high school graduation (Mortenson, 2001). This study echoes a large body of literature encouraging further research on the education of the poor in the United States, particularly strategies for successfully assisting students from both first-generation and low-income backgrounds in achieving at the highest levels of educational attainment.

Sub-hypothesis 1C & 1D

Ho: 1C/1D There is no significant difference between the college continuation rates of male and female Southwest Region TRIO participants and the college continuation rates of male and female students nationally.

Upon review of the results of this study, it is clear both male and female Southwest Region TRIO students between 1991-2001 continue to college at lower rates than male and female students nationally. Once again it is important to note, however, the Southwest TRIO sample included all income levels, but had a majority of students from low-income families (368/414–89%). This is an important footnote when considering Southwest TRIO students' significantly lower rates of college continuation by gender when compared to the national gender sub-populations for which the low-income percentages were unknown.

The percentage of low-income females in the sample was 88.3%, and 89.7% of males in the sample were low-income. Comparison data included females and males of all income levels; the low-income percentages were unknown. Therefore, a general interpretation of gender study findings is that socio-economic status most likely influenced this “college ready” low-income male and female student population's ability

to continue to college at comparable and higher rates. However, although both male and female SW TRIO students may not have continued to college after high school at significantly higher rates, female students in the SW TRIO sample eventually attend college at a rate of 86% (207/240). Male students eventually attended college at a rate of 77% (134/174).

Sub-hypothesis 1E-1H

Ho: 1E-1H There is no significant difference between the college continuation rates of Hispanic, white, African American and other race Southwest Region TRIO participants and college continuation rates of the respective race students nationally.

African American students in the present study did not continue to college at significantly different rates from African American students nationally. This is an important finding because 91% of African American students in the study sample were low-income. The national comparison African American group consisted of all-income levels. Study results reveal African American students in the southwest region, the majority of which were low-income, continue to college at par with all-income students nationally.

This study produced evidence that between the years 1991-2001, Hispanic SW TRIO students continued to college at rates significantly lower than all-income Hispanic students nationally. This is not an unexpected finding given 94% of the Hispanic students in this sample were low-income. This majority low-income Hispanic population was compared to all-income level Hispanics between 1991-2001 because Hispanic, low-

income college continuation data were not available for the ten-year period of study. The Bureau of Labor and Statistics does not publish immediate college continuation data that include multiple variable categories (i.e. low-income Hispanic, an income/race category). Upon submitting a special request, the researcher was provided with low-income/race college continuation data collected for a brief period between the years 1991-1993 (a 3-year period; unreported and unpublished by the Bureau of Labor and Statistics). When college continuation of the 1991 – 2001 SW TRIO Hispanic sub-sample (43.8%) was compared to low-income Hispanics nationally for the unreported three-year period of 1991-1993 (51.7%), there was not a significant difference at the $p < .01$ level ($z = 2.4$).

According to the literature, low-income students continue to college at lower rates than higher income students (Mortenson, 2001). Again, this was not the case for African American SW TRIO students between the years 1991-2001. The African American SW TRIO population continued to college at par with all-income African American national population.

As with Hispanic SW TRIO students, the present study did find a significant difference between college continuation rates of white Southwest TRIO participants and the continuation rates of the white students nationally. Southwest Region TRIO white students, 80% of whom were low-income, continued to college immediately after high school at significantly lower rates (45.1%) than white students nationally (64.3%). One possible explanation is the comparison group consisted of a national average for all-income whites. The Bureau of Labor and Statistics (BLS) provided the researcher with low-income/race college continuation for 1991-1993 (a three-year period; unreported and

unpublished by the BLS). When college continuation of the 1991 – 2001 SW TRIO white sub-sample (45.1%) was compared to low-income whites nationally for the unreported three-year period of 1991-1993 (48.1%), there was not a significant difference at the $p < .01$ level ($z = .712$).

Also important to note, for all race, gender, and first-generation comparison groups, the national college continuation average includes states having higher overall college continuation rates. In addition to all-income comparison groups for race, gender, and first-generation college, the inclusion of states with higher college continuation and overall educational achievement may have impacted the results. In particular, white, Hispanic, first-generation college, male and female comparisons may have been affected by including in the national comparison group states with higher overall educational achievement.

Finally, other race students in the SW TRIO sample continued to college at significantly lower rates than other race students nationally. The other race student sub-sample was extremely small in number ($n=26$) compared to the Hispanic ($n=210$), white ($n=122$), and African American ($n=56$) race sub-samples. In fact, the Bureau of Labor and Statistics does not report other race students' college continuation because of small sample sizes and the high probability of error. The comparison percentage for this population was taken from Postsecondary Education OPPORTUNITY (Mortenson, 2000) because they were not available through the Bureau of Labor and Statistics. Therefore, it is the conclusion of the researcher the small sample size of the SW TRIO other race group most likely contributed to the results. Given a larger other race sample, results of

the other race college continuation finding compared to national continuation rates as reported by Postsecondary Education OPPORTUNITY (2000) may be more easily interpreted.

Overall, study findings present clear evidence SW TRIO white, African American, Hispanic and other race students do not continue to college immediately after high school at significantly higher rates than students nationally. However, as indicated in Table 5, SW TRIO students of all races between the years 1991 – 2001 attended college (eventually enrolled) at higher rates than respective race students of all-incomes nationally. The SW TRIO (eventual) college attendance percentages compared to national low-income percentages for all race groups provides a more detailed picture of college participation of this group and is particularly noteworthy considering all SW TRIO race groups were majority low-income.

Table 5

College Attendance of SW TRIO Compared to Nation by Race and Income

Race	SW TRIO All-Income 1991-2001	Nation All-income 1997-2000	Nation Low- Income 1997-2000
White	77.0%	64.1%	39.6%
African American	82.1%	46.4%	28.3%
Hispanic	84.8%	39.8%	29.4%
Other race	88.5%	77.9%	73.9%

Note. National data source: Post-secondary Education OPPORTUNITY, (Mortenson, 2001).

Southwest TRIO students' percentages of college attendance, although not always immediately after high school graduation, not only exceed percentages for the low-income student category to which the majority of the study population belonged, but also exceeded percentages of college attendance for all-income groups. One possible explanation for the high percentages of college attendance among SW TRIO students can be found in college choice literature which suggests early development of college aspirations, by the 9th or 10th grade high school year, result in an increased likelihood of college enrollment (Hossler et al., 1999).

TRIO program participation begins as early as the ninth grade year for high school participants and sixth grade for middle school student participants. Early participation more than likely results in early development of college aspirations. Another indicator of development of early college aspirations is that TRIO program participation is voluntary. Students volunteering to participate in these college preparation programs may have already developed an early aspiration for college. Further, if students are undecided upon entry into one of the programs, counselors and staff work with students to develop goals and concrete plans to attend college.

Sub-hypothesis 1I-1M

Ho: 1I-1M There is no significant difference between college continuation rates of Southwest Region TRIO participants from Texas, Oklahoma, Louisiana,

Arkansas, and New Mexico and the college continuation rates of all eligible high school students from the respective states.

This study found a significant difference between college continuation rates of UNT Southwest TRIO program participants from Texas (42.9%) and Arkansas (26.7%) and the continuation rates of high school students from the respective states (Texas - 52.2%, Arkansas – 49.8%). This is not an unexpected finding considering the Texas Southwest TRIO sub-sample included 90% low-income students, and the Arkansas sub-sample was 100% low-income. Comparison data did not include data for low-income students from these states and the other states examined in this study. However, it is logical to assume the SW TRIO sub-samples had a considerably larger low-income student population than the respective state comparison groups that consisted of all income-level high school students from the Texas and Arkansas.

Quite possibly because of small sample sizes, there was no significant difference between college continuation rates of SW TRIO students from Oklahoma, New Mexico, and Louisiana and continuation rates of all students from the respective states.

Hypothesis 2/Sub-hypotheses 2A – 2B

Ho: 2 College continuation rates among TRIO students from the Southwest Region between the years 1991 - 2001 is not a function of race/ethnicity, gender, income level, first-generation college status, and home-care environment.

Researchers have suggested race, gender, parent education, and income are related to post-secondary goals (Kao and Tienda, 1998) and college enrollment (Rumberger and Larson, 1998). One may logically conclude these non-academic characteristics to be predictors of, or at the very least, contributors to the likelihood of a student's post-secondary enrollment. Results of the logistic regression analysis indicated among SW TRIO participants from 1991-2001, college continuation among SW TRIO students was not a function of race/ethnicity, gender, income level, first-generation college status, or type of home-care environment. Among SW TRIO participants between 1991-2001, race/ethnicity, gender, income level, first-generation college status, and home-care environment were not reliable predictors of college continuation.

Ho: 2A Among SW TRIO participants between 1991-2001, there will be no difference between white students' college continuation rates and the college continuation rates of African American, Hispanic, and other race students.

Although previous studies have shown white students to be more likely to enroll in college than African American and Hispanic students (Akerheilm et al., 1998; U.S. Bureau of the Census, 1997), the researcher found no significant difference between the college continuation rates of white SW TRIO students and those of African American, Hispanic, and other race SW TRIO students. There was no significant difference between college continuation of white SW TRIO students when compared to African American, Hispanic, and other race SW TRIO students. Further, among TRIO students in the

southwest region of the United States race is not a significant predictor of college continuation. All racial groups continued to college at rates not significantly different. Further, presenting contradictory evidence to U.S. Bureau of the Census (1997) data, all study participants graduated high school. Previous research has reported lower rates of high school completion for African American and Hispanic students compared to white and other race student high school completion (Carter & Wilson, 1996). Racial background of program participants was not related to high school completion for this group.

College continuation the year after high school completion for this group was lower than expected given the college preparation received during high school through TRIO participation. However, the goal of TRIO programs is to increase the number of students earning college degrees. In this study, continuing to college by October of high school graduation appears to have had little influence on whether a student eventually enrolled in college as the majority of students in the sample did attend college.

Overall, eventual college attendance rates for all-income SW TRIO students were higher than the national rates for all-income students. White SW TRIO students was 77% (64.1% nationally); all-income African American college attendance was 82.1% (46.4% nationally); all-income Hispanic was 84.8% (39.8% nationally); all-income other race 88.5% (77.9% nationally). Higher rates of college attendance for all race groups of SW TRIO students when compared to respective race groups nationally is significant considering the majority of the SW TRIO population was low-income. Though the vast

majority of the sample participants (89%) were low-income, students in the SW TRIO sample exceeded college attendance rates of all-income respective race groups nationally.

One possible explanation for Southwest Region TRIO participants' higher rates of college attendance compared to all-income students nationally (Table 5) is the mentorship students receive throughout their participation in TRIO programs. Levine and Nidiffer (1996) conducted a study of how the poor reach college and found mentors were critical in helping low-income students attain post-secondary education. All students in the present study experienced mentorship through their participation in Talent Search, Upward Bound, or Upward Bound Math and Science. TRIO mentors (often former program participants from low-income, first-generation and ethnic minority backgrounds who have successfully attained a college degree) help students through the college identification, application, and visitation process. Mentors answer students' questions about requirements for college admission, financing higher education, and serve as role models helping students visualize and develop a plan for college degree attainment.

Ho: 2B Among SW TRIO participants between 1991-2001, there will be no difference between the college continuation rates of in-home care environment students and the college continuation rates of out-of-home care environment students.

One of the goals of this study was to examine home-care environment as a non-academic characteristic related to college continuation of Southwest Region TRIO participants. The researcher anticipated foster care, grandparent guardianship, and kinship

care SW TRIO student participants would be least likely to continue to college because of more serious life transitions and issues of mobility (Schwartz, 1999). However, this study produced evidence that out-of-home care SW TRIO students continued to college at significantly higher rates (8/15-53.3%) compared to in-home SW TRIO students (7/15-44.1%). Although the out-of-home care sub-sample was small in number, which may account for the higher rate of college continuation for out-of-home care students, this was an unanticipated finding.

Although there may be multiple factors that contributed to this unexpected finding, small out-of-home sub-sample size ($n=15$) as well as students' pending financial obligation to care for themselves, and availability of college financial aid are a few possible explanations. Out-of-home care students may feel a more immediate need to secure a means of self-support upon high school graduation. In most states, foster care services are not provided beyond the age of eighteen. Therefore, it is often understood by many of these students and caregivers that the living environment will change and the student will become independent and solely responsible for him/herself as a result of graduating high school and turning 18, the legal adult age. Also, these students, some of whom are wards of the state, may qualify for more state and federal aid in the form of grants, such as the federal Pell Grant.

Relationship of the study to prior research/Theoretical implications

Previous research has shown Upward Bound students tend to be more concerned about financing college; they plan to work more hours during the first year of college

than non-Upward Bound students (McClure & Child, 1998). One possible explanation for lower rates of immediate college continuation but higher rates of entry at a later time in the present study is that SW TRIO students in this study may have decided to devote the first year out of high school to work with intentions of saving money for college.

Researchers have also shown that among low socio-economic students, TRIO program participants to be 24 % more likely to become college qualified (Cabrera & La Nasa, 2000a). Students in the present study were clearly prepared for college admittance—one of the program objectives—because at least 82% were admitted to college and eventually enrolled.

The finding showing most of the sample enrolling in college at a time later than the first fall after high school graduation is also consistent with previous research. In a longitudinal study of 1,000 low-income and potential first-generation college students, 14% of the students enrolled in college immediately after high school graduation while a total of 83% eventually enrolled (Cabrera & LaNasa, 2000a). The Cabrera LaNasa study findings offer greater insight into the findings of the present study. A 44% immediate college continuation rate may seem low when presented in isolation. However, when understood in relationship to other research findings on low-income, first-generation college continuation, a 44% continuation rate after high school is promising. Horn (1997) found that among students with any risk factors, 35% of enrolled in college within two years of high school graduation. Students in the present study had at least two risk factors and continued to college within one year at a rate of 44%.

Again, one possible explanation for notable college continuation rates among this group, supported by the literature, is TRIO program participation. Quite possibly, cultural capital related to gaining college access and a college education transmitted through TRIO Programs to disadvantaged students may assist these students in achieving access to post-secondary education. Types of cultural capital transmitted through TRIO programs include material resources such as college preparation curriculums, concrete information on admissions requirements, application and interview procedures, and an introduction to the higher education institution through campus visits and residential experiences.

This study's findings also support college choice literature suggesting that early development of college aspirations by the 9th or 10th grade high school year results in an increased likelihood of both immediate college continuation and eventual college enrollment (Hossler et al., 1999). The majority of the students in this sample entered the Upward Bound Math and Science program in the 10th or 11th grade. According to Hossler et al., this may be too late for development of early college aspirations leading to higher rates of immediate college continuation.

One of the major goals of TRIO programs is to support and aid in the development of the college aspirations of low-income, first-generation, and underrepresented high school students. All of the study participants had multiple year participation in more than one SW TRIO program beginning as early as the 6th grade before participating in UBMS in the 10th or 11th grade. Study participants also participated in either Upward Bound or Talent Search during the early high school

years—important aspiration development years. Because participation in TRIO is voluntary, this study consisted of students who clearly had developed aspirations for college in the early years of high school. Whether the students had those aspirations prior to participation in TRIO or as a result of TRIO program involvement is unknown. However, the 82% college attendance rate of this study's sample supports college choice literature suggesting early development of college aspirations positively impacts actual college attendance.

Researchers have also suggested race, gender, parent education, and income are related to post-secondary goals (Kao and Tienda, 1998) and college enrollment (Akerhielm et al., 1998; Rumberger and Larson, 1998). However, within sample comparisons of SW TRIO students' college continuation did not produce evidence these variables were significant predictors of college continuation. Among this population of SW TRIO students, African American and Hispanic students were just as likely to continue to college after high school as white and other race students. First-generation students were just as likely to continue to college as non-first generation college students, and low-income students were just as likely as higher income students. Finally, gender was not a significant predictor of college continuation.

Quite possibly, the college preparation these students received mediated the non-academic factors that have been shown to negatively impact college continuation immediately after high school and overall post-secondary education achievement. Regardless of income, parental education and racial backgrounds, all students participating in TRIO programs receive equal college preparation services such as

academic counseling, college visitation, tutoring, and assistance with college and financial aid applications. This is an encouraging finding as one of the goals of TRIO programs is to provide equal opportunity for post-secondary education to groups traditionally underserved in American education.

Implications for Practice

College continuation—students’ remaining in the education “pipeline” from high school to college—was the focus of this study. However, college enrollment percentages are important to report given the fact the goal of federal TRIO programs—increased college degree attainment for underrepresented, low-income, and first-generation students—would not be possible without college enrollment (at any time).

Although all Southwest Region TRIO sub-samples (i.e. males, females, Hispanics, whites, first-generation) did not continue to college after high school at statistically significant higher rates than respective group high school students nationally or on a state level, the majority of study participants (341/414–82.3%) did enroll in college at some point in time. This finding may add to the existing knowledge base by supporting one recommendation for improved TRIO Upward Bound projects. Multiple-year student participation in TRIO to increase post-secondary education impacts was one recommendation of a national longitudinal study of Upward Bound (Mathematica, Inc., 1999).

All of the current study’s participants were multiple-year and multiple project (Upward Bound, Talent Search, Upward Bound Math and Science) participants. Multiple

project participation may have contributed to eventual post-secondary attendance. In the event future research supports this hypothesis, multiple-year TRIO program participation could be an implication for practice.

The fact that students in the present study did not continue to college immediately after high school could suggest disconnect between these programs and the schools. Mathematic Inc. (1999) in a national study of Upward Bound found Upward Bound had limited impacts on students during the high school years. Researchers reported Upward Bound had no impact on school behavior, participation in extracurricular activities, grade point average, increased communication with parents about high school, or even high school graduation rates. The present study presents counter evidence to impacts of multiple TRIO program participation (the sample consisted of students who participated in Upward Bound or Talent Search before participation in Upward Bound Math and Science) on high school graduation. All participants graduated from high school. Multiple program participation and increased program exposure was one recommendation of the Mathematica Inc. (1999) study.

However, all students in the sample did not continue to college immediately after high school. Therefore, one possible implication of the study based on the Mathematic Inc. study (1999) is the need for a stronger link between the program and high schools. High school TRIO programs are most likely viewed as “add-on” programs because most student TRIO activities such as campus visits, admission and financial aid, post-secondary education and career workshops, take place outside of the classroom and outside of school hours. Campus visits and participation in university-level introductory

courses to orient students to the higher education community are simple activities that could easily be linked with present high school curriculum.

Teachers of Upward Bound, Talent Search and Upward Bound Math and Science students are not informed of program activities. Informing and involving teachers and administrators of program objectives, curriculum, and experiences provided through TRIO programs may provide increased support that researchers have found to be linked to the post-secondary success of low-income students (Levine & Nidiffer, 1996). Further, a connection to the higher education institution has been found to be positively related to post-secondary success of minority and low-income students (O'Brien & Shedd, 2001). Teachers' reinforcement of and support of students' pre-college campus activities through the students' association with TRIO programs may help students feel a greater sense of belonging to the higher education community.

Eventual college attendance of the sample (82.3%) supports research of Upward Bound studies suggesting the program's positive impact on students' college enrollment, aspirations, and post-secondary education progress (Burkeimer, Riccobono, Wisenbaker, 1979; Mathematica Inc., 1997). Possibly multiple-year TRIO project participation provided students the time to develop early college aspirations and eventual college enrollment. Early development of college aspirations has also been positively related to post-secondary achievement (Hossler et al., 1999; Kao and Tienda, 1998). If supported by future research, continued assistance in the development of early (and concrete) aspirations in TRIO participants is another possible implication for practice.

This chapter presented research findings supporting previous research showing effectiveness of TRIO programs in increasing college enrollment trends of socially and economically disadvantaged students. This study did not produce evidence that among Southwest Region TRIO participants race/ethnicity, gender, parental education/first-generation college status, income, or type of home-care environment were significant predictors of college continuation. Southwest Region TRIO participants continue to college after high school at par with low-income students nationally. However, the college enrollment rates of these students—at some point after high school graduation—exceed national rates of college enrollment when compared to both low-income and all-income students nationally. Chapter V presents a summary of the current study and builds on the research findings presented here by drawing conclusions and offering recommendations for future research and practice.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Rapid demographic shifts are altering the composition of the United States. The white population is expected to decrease by 23% from 1990 to 2050, and all underrepresented groups are expected to increase (U.S. Bureau of the Census, 1998). Further, predominately children of color have become a rapidly increasing group of children and youth to live with foster families and in kinship care home environments (Department of Health and Human Services, 2000; NCRFS, 2000; Schwartz, 1999a). Significant changes in demographics support the importance of examining the post-secondary achievement of underrepresented minority, low-income, first-generation, and out-of-home care students. Post-secondary education is a cultural asset critical to social mobility (McDonough, 1997). Nationally, this population's post-secondary achievement and college continuation rates are disproportionately low compared to those of the mainstream. Lack of higher education achievement is largely related to low-income levels, parents' educational background, and lack of other resources, including knowledge about post-secondary education.

Summary

The purpose of this study was to examine college continuation of Southwest Region TRIO participants between the years 1991 – 2001. In the first phase of the study,

descriptive statistics (proportions) and a test of proportions were used to compare the college continuation rates of Southwest TRIO students to the college continuation rates of similar student populations nationally. In the second phase of the study, descriptive statistics and a test of proportions were used to examine within sample differences of college continuation rates by home-care type and race. College continuation among SW Region TRIO students between the years 1991 – 2001 was compared by home-care type and race. Finally, also in the second phase of the study, logistic regression analysis was used to determine whether social and economic characteristics (race/ethnicity, income, gender, first generation college status, and home-care type) were predictors of college continuation among Southwest Region TRIO students between the years 1991-2001.

The study produced evidence that TRIO students from the southwest region of the United States continue to college at rates not significantly different from the general population of low-income students nationally. However, first-generation college, male and female Southwest Region TRIO participants continue to college at significantly lower rates from first-generation, male and female students of all income levels nationally. Regionally, however, SW TRIO students continued at rates not significantly different from the general population of students—all income levels—in the southwest region. Further, Southwest Region TRIO African American students continued to college at similar rates to those of African American students of all-income levels nationally. The present study clearly produced evidence TRIO programs successfully prepare disadvantaged students for college enrollment. Finally, this study offers a primary data source on southwest college continuation trends. The United States Census Bureau

Current Population Report only reports college continuation patterns on national—and not regional—levels.

This study also produced evidence that Southwest region out-of-home care TRIO students (53.3%) continued to college at significantly higher ($p < .01$) rates compared to in-home Southwest Region TRIO students (44.1%). Finally, among Southwest Region TRIO participants between the years 1991–2001, race/ethnicity, income, gender, first-generation college status, and home-care environment were not significant predictors of college continuation.

One possible explanation of lower rates of college continuation for first-generation SW TRIO students' when compared to the national average is the high percentage of the first-generation SW TRIO students who were both low-income and first-generation college (347/368–84%). The proportions of the comparison group—first-generation students nationally—who were both low-income and first-generation college were unknown. Ninety-four percent of the SW TRIO sample possessing an additional non-academic characteristic—low-income—may have contributed to lower rates of continuation when compared to first-generation students nationally. Previous studies have shown both low-income status and first-generation college status to result in lower rates of college continuation (Mortenson, 2001; Warburton et al., 2001).

Considering overall rates of post-secondary entry at some point in time—rather than rates of continuation to college immediately after high school—low-income status alone has been related to lower rates of post-secondary attendance (Akerhielm et al., 1998). A major finding (considering the goal of TRIO programs is increased higher

education opportunity and earning of higher education degrees), the present study produced evidence that low-income SW TRIO students attend post-secondary education at higher rates than low-income students nationally. Low-income SW TRIO students' college attendance rates (82%) are much higher the college attendance rates of low-income students nationally (44%). Although entry or attendance is not sufficient in terms of actual graduation rates, this finding is encouraging. High rates of attendance of SW TRIO students reflect a recent report of the National Pew Hispanic Center suggesting Latino and other ethnic minority participation in higher education demonstrates a shared value and commitment to education (Fry, 2002).

Surprisingly, this study produced evidence SW TRIO out-of-home care students continue to college at higher rate (53%) than in-home care students (44%). Possible explanations of higher continuation may be out-of home care students' greater sense of obligation or sole responsibility to care for themselves immediately after high school graduation as well as increased availability of college financial aid for these students. In most states, foster care services are not provided beyond the age of eighteen. Therefore, it is often understood by many of these students they will be solely responsible for their individual care upon graduating high school and turning 18, the legal adult age. Also, these students, some of whom are wards of the state, may qualify for more state and federal aid in the form of grants, such as the federal Pell Grant.

Conclusions and Major Implications

The results of this study suggest TRIO students from the southwest continue immediately to college upon high school graduation at lower rates than do students nationally. At first glance, these results may raise questions about the ability of federal TRIO programs—instituted almost forty years ago—to equitably increase post-secondary opportunities for traditionally underserved student populations. However, the regional continuation comparison revealed these students continue to college at rates not significantly different from to the general—all-income and all-race—regional population. As there is a great need for these programs in this area, more of these programs should be instituted in the southwest region and select program components should be replicated in schools and social service agencies.

A research finding beyond the scope of the original research questions but with major implications, SW TRIO students in the present study eventually attended college at much higher rates than students nationally. For example, with respect to the single variable of income, low-income SW TRIO students between the years 1991-2001 eventually attended college at a rate of 82% compared to 44% of all low-income students nationally who enrolled in college at some point in time. Southwest Region TRIO students attend college, but the majority of students enroll at a time later than the first fall after high school graduation. Federal TRIO programs must address this trend. Program legislation must focus on strategies or even additional policy programs to assist students in transitioning to college immediately after the high school year because immediate

continuation to college increases the likelihood of actual degree attainment (NCES, 2002).

Students in the present study were not served by UBMS during the summer following high school graduation. The results of this study may suggest a need for an additional TRIO program as a separate “summer bridge” serving recent high school graduates who have participated in any of the federal high school TRIO programs. The high rates of eventual attendance indicate these students are prepared for college, college qualified, and motivated. Every effort should be made to assist in immediate enrollment after high school. At the very least, continued investigations into the major barriers in TRIO students’ immediate transitions must be encouraged and supported. From findings of those investigations, bridge strategies must be developed and implemented throughout existing and future programs.

The SWTRIO sample included students from all income levels, but 89% of the sample was low-income, and 84% of the sample was both low-income and first-generation. Therefore, the conclusion was drawn that possessing two “risk factors” associated with low educational attainment such as income and first-generation college status (NCES Condition of Education, 2002) may have hampered these students’ continuation to college immediately after high school (by fall of high school graduation year). Most importantly, however, the majority of these students did eventually enroll in college.

There is a desire among educators and other advocates of low-income and ethnic minority students to see these students continue to college after high school at

comparable and higher rates because of increased likelihood of eventual degree attainment. However, this study did not produce evidence that college continuation impacted actual college attendance. The fact that immediate college continuation after high school appeared to have little influence on whether students eventually enrolled is hopeful because college attendance is obviously a critical step in the attainment of the baccalaureate degree—the goal of TRIO education programs. Another implication, however, is that although most national college enrollment and achievement studies track and survey students six years from the point of high school entry—two years after high school graduation—to assess college enrollment and achievement trends, this time frame is not appropriate for assessment of TRIO program participants' post-secondary enrollment and achievement. Supported by this study's findings, TRIO students generally enroll in college later. Therefore, the timeframe for tracking and reporting TRIO student post-secondary achievement should be increased from the standard two years after high school to three or more years. However, if TRIO programs are enhanced to effectively address lower rates of immediate college continuation, the expanded timeframe may not be necessary.

With respect to race, existing literature shows higher college continuation rates for white students when compared to African American and Hispanic students. Further, other race students continue at higher rates than white students (Mortenson, 2000). Among Southwest Region TRIO participants between the years 1991-2001, there is no significant difference between college continuation rates of white, African American, Hispanic, and other race students. From this finding, the conclusion was drawn that either

the low-income variable—shared by most students in the sample—had more of an influence than race on college continuation among this group or participation in TRIO mediated the influence of race. Further research is needed to determine the true effect of TRIO participation on college continuation, retention, persistence, and degree attainment for this sample.

Literature also shows race/ethnicity, income, gender, and first-generation college status to be related to post-secondary enrollment and attainment (NCES, 2002; Warburton et al., 2001; Akerhielm et al., 1998; Kao & Tienda, 1998). Among Southwest Region TRIO students between the years 1991-2001 these nonacademic characteristics were not significant predictors of immediate college continuation after high school. Beyond the influence of these variables on likelihood of immediate college continuation, the scope of this study did not include. Examination of a general relationship of these variables to college continuation and/or eventual attendance, retention, persistence and degree attainment (i.e. correlations of these variables to post-secondary educational attainment) is an area for future research.

Finally, the University of North Texas Upward Bound Math and Science Regional Center between the years 1991-2001 (including students served by high school TRIO projects in the five states of the southwest region of the United States) exceeded federal requirements for percentages of students served from low-income and first-generation backgrounds. Federal regulations mandate all TRIO programs serve at least two-thirds low-income and first-generation students. By law, two-thirds (66%) of all students served in individual TRIO projects must be both low-income and first-generation.

It is worth noting, the Upward Bound Math and Science Regional Center between the years 1991 and 2001, exceeded the federal minimum requirement over the ten-year period. The program served 84% low-income and first-generation students. In fact, 89% of all students served were from low-income backgrounds. The high numbers of socio-economically disadvantaged students served by the program during these years is noteworthy because TRIO program directors have discretion in the selection process. Once the federal requirement for the number of low-income students that must be served has been met (66%), directors are free to select non-low-income students who according to research may be more likely to continue to college immediately and earn a degree. Degree completion within 10 years of entry into the program is how all TRIO programs are ultimately measured and evaluated for continued funding. Directors are well aware of research and post-secondary success trends. During the ten-year period, the UBMS TRIO program at the University of North Texas exceeded the minimal requirements for serving low-income students, by nearly 20 or more percentage points in every race and gender category, fulfilling the true purpose and intent of the grant. The high numbers of low-income and first-generation students served shows the extent of the need for these programs in the southwest region.

The large numbers of low-income students served by SW TRIO programs suggest a great need for educational opportunity programs for low-income students in the southwest region of the United States. Again the large numbers of low-income students served may also have influenced college continuation rates when compared to all students

nationally. Low-income students are more likely to have financial need and employment obligations that may interfere with immediate college continuation.

Recommendations for Future Research

More research on TRIO's effectiveness should be undertaken. To gain a more accurate picture of national minority student post-secondary achievement, additional studies of student higher education experiences and programs are needed (O'Brien & Shedd, 2001). This study provided information on immediate college transition trends of low-income, minority students served by TRIO in the southwest region. Low-income Southwest TRIO students' college continuation should also be compared to low-income students in the region to provide a more accurate picture of Southwest TRIO programs' success in contributing to increased numbers of economically disadvantaged students continuing to college continuation after high school. As previous studies indicate, geographic location influences college continuation rates (Mortenson, 2000). For example, lower rates of child poverty may have an influence on higher continuation rates of students in northeastern states when compared to students in other regions nationally. This study compared college continuation rates of Southwest TRIO students to all students regionally and nationally. More regional studies of TRIO students' post-secondary transitions and achievement would be beneficial in gaining a more detailed picture of TRIO's effectiveness by region and on a national scale.

This study did not explore retention, persistence towards degree attainment, or degree attainment. Therefore, additional research is needed on Southwest TRIO students'

actual higher education achievement. The most recent large-scale studies by Mathematica Inc. (1999) of Upward Bound—the most comprehensive of all the high school TRIO programs—has been criticized for presenting interim data as a final report and for failing to report college retention and overall college access of Upward Bound students (Pell Institute, 2002). The present study's findings are conclusive only in providing data on SW TRIO participants' college continuation patterns in the context of national and state trends for similar populations and are also lacking in terms of providing conclusive data on actual post-secondary education achievement. A definite, conclusive picture of the impact of Southwest TRIO programs with regard to increasing the number of degrees earned by socially and economically disadvantaged populations cannot be offered through this study. An important question to be investigated is whether immediate college continuation influences degree attainment within this group of students.

Future research should also include interviews and surveys of Southwest Region TRIO students between 1991-2001 in an effort to determine whether and to what extent non-academic characteristics were perceived as barriers to college continuation, enrollment, and achievement. Although the statistical procedure used in this study produced results indicating social and economic characteristics (race/ethnicity, income, gender, first-generation status, and home-care type) were not predictors of college continuation, it may be beneficial to gather qualitative information from students to determine which of these variables influenced decisions regarding college continuation and enrollment decisions and ultimate college degree attainment.

Additionally, interviews and surveys of both in-home and out-of-home care environment students should be conducted to gather information concerning perceived barriers and supports in college continuation, retention, and completion. “The extent to which individuals and groups have access to educational opportunities and how they progress through various levels are both important to monitor” (NCES, 2002, p.42). Remaining questions at the conclusion of this study are: 1) How do regional TRIO programs compare to other programs across the nation in student college continuation, retention, and graduation rates? 2) What are the college completion rates of Southwest Region TRIO students between the years 1991 and 2001? 3) Why do college qualified students served by TRIO continue to college immediately after high school at lower rates than students nationally? 4) What barriers to immediate college continuation exist among TRIO students? 5) What reasons do TRIO students who never enroll in college give for not attending college immediately or at a later time?

Recommendations for TRIO Professionals and Concerned Educators

Educators, TRIO professionals, and policy makers interested in the preparation of secondary high school students for academic success beyond high school should encourage, support, and further advance student participation in high school TRIO projects such as Upward Bound, Talent Search, and Upward Bound Math and Science. The College Board (1999a) in a report of the National Task Force of Minority High Achievement recommended once again strategies and educational programs supporting high minority achievement in higher education. Evidenced in this study’s findings of

Southwest TRIO students' high rates of college attendance, these programs successfully meet the challenge of preparing students for post-secondary enrollment and should be supported and enhanced.

Low-income and first-generation students of all abilities and ethnicities are eligible for TRIO program participation. A major problem, however, is that TRIO programs are presently funded to serve only ten percent of the eligible population (Council for Opportunity in Education, 2000). Secondary school administrators and teachers can help by replicating program components in schools serving large numbers of the TRIO target population—low-income, first-generation, and ethnic minority students. Students are provided services supporting the college application process such as preparation for college admissions exams, applying for college financial aid, and orienting students to the higher education community through frequent campus visits. In addition, TRIO programs can reciprocate by assisting students with the successful completion of high school requirements by offering tutoring and other academic and study skill workshops throughout the academic year and summer.

In an effort to reinforce skills taught and keep students connected to the university campus, TRIO programs can also employ TRIO alumni who have recently graduated from high school as summer tutors and mentors to current TRIO high school participants. This summer internship would continue and strengthen students' connection to college campuses while providing summer employment opportunities for students during the transition period between high school completion and official fall college enrollment.

As these programs are multi-year programs providing counseling, cultural enrichment activities, and pre-college campus experiences in addition to general academic services, educators and policy makers should encourage and support eligible students' multi-year participation in the programs. Previous research has recommended multiple-year participation for increased program impact of students' post-secondary education. The present study examined a sample of TRIO high school students with multiple year program participation.

Directors of TRIO projects should work to strengthen the connection between the projects and the schools. Teachers of Upward Bound, Talent Search and Upward Bound Math and Science students are not informed of program activities. Informing and involving teachers and administrators of program objectives, curriculum, and experiences provided through TRIO programs may provide increased support that research has found to be linked to the post-secondary success of low-income students (Levine & Nidiffer, 1996). Further, students' connection to the higher education institution has been found positively related to post-secondary success of minority and low-income students (O'Brien & Shedd, 2001). Teachers' and administrators' reinforcement, support, and encouragement of students' pre-college campus activities through TRIO program participation may help students feel a greater sense of belonging to the higher education community.

For example, during the high school years, Upward Bound, Talent Search, and Upward Bound Math and Science participants form connections to host institutions by participating in "shadowing experiences" where students are assigned an undergraduate

mentor and “shadow” a day in the life of a college student. Students also participate in an “adopt-a-campus street” activity in which TRIO students select a campus avenue to keep clean during the academic year and summer residence. These types of activities can be easily replicated and integrated into the existing school curriculum. The College Board (1999a) also recommended supplemental education programs be inclusive of students at all socio-economic levels. These types of activities could be provided for all students in the school community regardless of income level.

Educators interested in assisting students from disadvantaged backgrounds in reaching post-secondary education can help by introducing eligible students to high school TRIO programs including Upward Bound, Talent Search, and Upward Bound Math and Science. As the programs recruit students on high school campuses, teachers should become aware of the opportunities for participation on their local campuses and provide information to eligible students. Teachers can also become involved in high school TRIO programs. The programs utilize teachers during the academic and summer components to serve as instructors, tutors, and field trip chaperones. As these programs “bridge the gap” from high school to college for students, classroom teachers can become instrumental in providing the link between students’ TRIO program participation and high school experience.

Finally, according to a recent U.S. Department of Education report of the National Commission of the High School Senior Year (2001), one problem in student post-secondary achievement is the lack of communication between K-12 systems and post-secondary institutions. The College Board (1999a) recommended partnerships between

research communities and national and local organizations for the purpose of designing supplemental education programs reflective of the “specific circumstances, needs, and perspectives, of the local communities—especially the parents and children they serve” (p.33). Institutions of higher education, schools, local community organizations, and education opportunity professionals must collaborate to design, implement and support supplemental educational programs to support the successful post-secondary transitions of socio-economically disadvantaged populations.

The American education agenda suggests a clear commitment to low-income, first-generation college, and underrepresented students’ access to and achievement in post-secondary education. TRIO programs provide a place for concerned educators to demonstrate a parallel commitment to this often underserved student population. Teachers, TRIO professionals, researchers, and policymakers alike can contribute to the success of these programs by supporting research and the implementation of laws and policy that ensure the programs’ continued existence and enhancement. The maintenance of federal TRIO programs is vital. Reflected in the results of this study, TRIO programs provide increased opportunities for students from disadvantaged backgrounds to explore, prepare for, experience, and attend post-secondary education.

REFERENCE LIST

- Adelman, C. (1988). Transfer rates and the going mythologies: A look at community college patterns. Change, 20, 38-41.
- Akerhielm, K., Berger, J, Hooker, M., and Wise, D. (1998). Factors related to college enrollment: Final report. (Mathematica Publication No. 3360-028) Washington, D.C.: Department of Education.
- American Council on Education (ACE). (2000). 18th Annual status report on minorities in higher education. Washington, DC: American Council on Education . Retrieved January 20, 2002, from <http://www.acenet.edu/programs/omhe/status-report/index.cfm>
- Apple, M.W. (1996). Cultural politics and education. New York: Teachers College Press.
- Altshuler, S.J. (1997). A reveille for school social workers: Children in foster care need our help. Social Work in Education, 19, 2, p.121-128.
- Balz, F. & Esten, M. (1998). Fulfilling private dreams, serving public priorities: An analysis of TRIO students' success at independent colleges and universities. The Journal of Negro Education, 67,4, 333-363.
- Bateman, M. (1990). Correlates of black and white student predisposition to pursue postsecondary education. Unpublished doctoral dissertation, Indiana University, Bloomington.
- Blake, J.H.(1998). The full circle: TRIO Programs, higher education, and the American future—Toward a new vision of democracy. The Journal of Negro Education, 67,4, 329-332.
- Borg, W. & Gall, M. (1989). Educational research. Longman: New York.
- Bourdieu, P. (1986). The forms of capital. In J.G. Richardson (Ed.), Handbook of theory and research for the sociology of education. New York: Greenwood Press.
- Burkheimer, G.J., Riccobono, J., & Wisenbaker, J. (1979). Evaluation study of the Upward Bound programs: A second follow-up (Final Report). Durham, NC: Research Triangle Institute, Center for Research and Evaluation. (ERIC Document Reproduction Service No. ED 186 574).

- Bush, G. & Paige, R. (2001). No child left behind: Transforming the federal role in education so that no child is left behind. Washington, D.C: U.S. Department of Education. Retrieved February 20, 2002, from <http://www.ed.gov/inits/nclb/part2.html>
- Cabrera, A.F. (1994). Logistic regression analysis in higher education: An applied perspective. In John C. Smart (Ed.), Higher education: Handbook of theory and research, Vol. 10, 225-256. New York: Agathon Press.
- Cabrera, A.F. & La Nasa, S.M. (2000a). Overcoming the Tasks on the path to college for America's disadvantaged. New Directions for Institutional Research: Vol. 107, 5-22. San Francisco: Jossey Bass.
- Cabrera, A.F. & La Nasa, S.M. (Eds.). (2000b). Understanding the college choice of disadvantaged students. New Directions for Institutional Research: Vol. 107. San Francisco: Jossey Bass.
- Carter, D. & Wilson, R. (1996). Minorities in higher education: 14th Annual status report (ACE Publication No. HE030137). Washington, D.C.: American Council on Education.
- Catterall, J. (1998). Risk and resilience in student transitions to high school. American Journal of Education 106(2), 302 – 334.
- Chatterjee, S. & Price, B. (1991). Regression analysis by example. New York: John Wiley and Sons, Inc.
- Choy, S.P., Horn, L.J., Nunez, A., & Chen, X. (2000). Transition to college: What helps at-risk students and students whose parents did not go to college. New Directions for Institutional Research: Vol. 107, 45-63. San Francisco: Jossey Bass.
- Coles, A.S. (1998). TRIO achievers: The promise of the future. The Journal of Negro Education, 67(4), 432-443.
- College Board (1999a). Reaching the top: A report of the National Task Force on Minority High Achievement. New York, NY: College Board Publications. Retrieved February 20, 2002, from <http://www.collegeboard.org>
- College Board (1999b). Annual report. Retrieved October 20, 2001, from <http://www.collegeboard.com/pubaff/annrep01/CBAnnRpt2001>

- College Board (1999c). Projected social context for education of children 1990-2015. Retrieved January 27, 2002, from <http://www.collegeboard.com/about/association/taskforce/ProjectedEduc>
- College Board (1999). Group differences in standardized testing and social stratification. Retrieved January 27, 2002, from <http://www.collegeboard.com/research/html/rr9905.pdf>
- College Board (2001). 2001 College bound seniors are the largest, most diverse group in history. Retrieved January 27, 2002, from <http://www.collegeboard.com/press/article/0,1443,10429,00.html>
- Council for Higher Education (1994). Twenty-first century workforce commission report. Retrieved December 5, 2001, from <http://www.workforce21.org/finalreport.htm>
- Council for Opportunity in Education (2000, March). Fiscal year 2002 budget request. Paper presented at the Council for Opportunity in Education Policy Seminar, Washington, D.C.
- Council for Opportunity in Education (1999). What is TRIO? Retrieved November 17, 2002, from <http://www.triprograms.org>
- Fry, R. (2002). Latinos in higher education: Many enroll, too few graduate. Retrieved October 8, 2002, from <http://www.pewhispanic.org/site/docs/pdf/latinosinhighereducation-sept5-02>
- Giroux, H. (1983). Theory and resistance in education: A pedagogy for the opposition. South Hadley: Bergin and Garvey.
- Giroux, H. (1992). Border crossings. New York: Routledge Press.
- Hossler, Schmit, & Vesper (1999). Going to college: How social, economic, and educational factors influence the decisions students make. Baltimore: Johns Hopkins Press.
- Heller, D. (1999). Racial equity in college participation: African American students in the United States. Review of African American Education, 1, 5-29.

- Horn, L. (1997). Confronting the Odds: Students at risk and the pipeline to higher Education (NCES Publication No. 98-094). Washington, D.C.: National Center for Education Statistics, U.S. Department of Education, U.S. Government Printing Office .
- Huck, S.W. (2000). Reading statistics and research (3rd ed.). New York: Longman.
- Kao, G. & Tienda, M. (1998). Educational aspirations of minority youth. American Journal of Education, 106, 349–384.
- Ladson-Billings (1994). The dreamkeepers: Successful teachers of African American children. San Francisco: Jossey Bass Publishers.
- Levine, A. & Nidiffer, J. (1996). Beating the odds: How the poor get to college. San Francisco, CA: Josey-Bass Inc.
- Licht, M.H. (1995). Multiple regression and correlation. In L.G. Grimm and P.R. Yarnold (Eds.) Reading and understanding multivariate statistics. Washington, D.C.: American Psychological Association.
- Lieberman, J.E. (1991). The LaGuardia- Vassar connection. Educational Record, 72, 43-45.
- Mathematica Policy Research, Inc. (1997). The national evaluation of Upward Bound—A 1990s view of Upward Bound: Programs offered, students served and operational issues. Washington, D.C: U.S. Department of Education.
- Mathematica Policy Research, Inc. (1999). The national evaluation of Upward Bound—A 1990s view of Upward Bound: Programs offered, students served and operational issues. Washington, D.C: U.S. Department of Education.
- McDonough, P. (1997). Choosing colleges: How social class and schools structure opportunity. Albany: State University of New York Press.
- McElroy, E.J. & Armesto, M. (1998). TRIO and Upward Bound: History, programs, and issues –past present, and future. The Journal of Negro Education, 67(4), 373-380.
- McLure, G.T. & Child, R.L. (1998). Upward Bound students compared to other college-bound student: Profiles of nonacademic characteristics and academic achievement. The Journal of Negro Education, 67(4), 346-363.

- Mortenson, T. (1996, April). Children, family income and college affordability. Postsecondary Education OPPORTUNITY, 46.
- Mortenson, T. (1998, December). Students from low-income families and higher educational opportunity. Postsecondary Education OPPORTUNITY, 78.
- Mortenson, T. (2000, April). Higher education opportunity by family income 1998. Postsecondary Education OPPORTUNITY, 94.
- Mortenson, T. (2000a, June). College continuation rates for 1999 high school graduates. Postsecondary Education OPPORTUNITY, 96.
- Mortenson, T. (2000b, November/December). Poverty, race, and the failure of public policy: The crisis of access in higher education. Academe, 86(6), 38-44. Retrieved February 7, 2002, from <http://www.aaup.org/publications/Academe/00nd/Nd00toc.htm>
- Mortenson, T. (2001, December). College participation by family income, gender, and race/ethnicity for dependent 18-24 year olds 1996-2000. Postsecondary Education OPPORTUNITY, 114.
- Mortenson, T. (2002, May). Public high school completion by state and race/ethnicity 1981 to 2000. Postsecondary Education OPPORTUNITY, 119.
- Murray, G. (1993). KERA and community linkages. Equity and Excellence in Education, 26, 65-68.
- Myers, D. & Schirm, A. (1997). The impacts of Upward Bound: Final report for phase I of the national evaluation. Washington, D.C.: U.S. Department of Education, Planning and Evaluation Services.
- Myers, D. & Schirm, A. (1999). The impacts of Upward Bound: Final report for phase I of the national evaluation. Washington, D.C.: U.S. Department of Education, Planning and Evaluation Services.
- National Center for Children in Poverty (2002). Low-income students in the United States: A demographic profile. Retrieved June 22, 2002, from <http://cpmnet.columbia.edu/dept/nccp/ycpf.html>

- National Center for Public Policy and Higher Education (2000). Measuring up 2000: The state-by-state report card for higher education. Retrieved July 22, 2002, from <http://measuringup2000.highereducation.org>
- National Center for Educational Statistics (1996). The condition of education 1996, Indicator 45 – Racial and ethnic distribution of college students. Washington, D.C.: U.S. Department of Education.
- National Center for Educational Statistics (1997). Findings from the condition of education 1996: Minorities in higher education. Washington, D.C.: U.S. Department of Education. Retrieved June 22, 2002, from <http://nces.ed.gov/pubs97/97372.html>
- National Center for Educational Statistics (2001). The condition of education 2001, Indicator 20 – Immediate transition to college. Washington, D.C.: U.S. Department of Education. Retrieved June 12, 2002, from <http://nces.ed.gov/programs/coe>.
- National Center for Educational Statistics (2002). The condition of education 2002, Indicator 20 – Immediate transition to college. Washington, D.C.: U.S. Department of Education. Retrieved August 7, 2002, from <http://nces.ed.gov/programs/coe>
- National Center for Resource Family Support (2002). Foster care statistics. Retrieved August 10, 2002 from http://www.casey.org/cnc/quick_facts/foster_care_statistics.htm
- National Clearinghouse on Child Abuse and Neglect (2001). Foster care national statistics. Retrieved June 20, 2002 <http://www.calib.com/nccanch/pubs/factsheets/foster.cfm>
- Nieto, S. (2000). Affirming diversity: The sociopolitical context of multicultural education. Longman Inc: New York, NY.
- Noble, L. (1997). The face of foster care. Educational Leadership, 54(7), 26-28.
- Nunez, A. & Cuccaro-Alamin, A. (1998). First-generation students: Undergraduates whose parents never enrolled in post-secondary education (NCES Report No. 98-082). Washington, DC: National Center for Education Statistics.

- O'Brien, C. & Shedd, J. (2001). Getting through college: Voices of low-income and minority students in New England. Washington, D.C: Institute for Higher Education Policy.
- Ottinger, C. (1991). College going, persistence, and completion patterns in higher education: What do we know? Research Briefs, 2(3). Washington, D.C.: American Council on Education.
- Paige, R. (2001, November). Education: The key for success for North Texans. Special invited address at the University of North Texas College of Education Meeting. Grapevine, Texas.
- Pascarella, E. (1995). What have we learned from the first year of the National Study of Student Learning? Washington, D.C.: Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED381 054).
- Payne, R. (1995). A framework: Understanding and working with students and adults from poverty. Baytown, TX: RFT Publishing.
- Pell Institute (2002). Issues related to the Report of Mathematica Polity Research Inc., Entitled Final Report of the National Upward Bound Evaluation. Washington, D.C.: Pell Institute for the Study of Opportunity in Higher Education.
- Pitre, P. (2002). An exploratory study of college choice: A comparison African American and White Maryland high school students' aspirations towards college attendance. Unpublished doctoral dissertation. College of Education, University of Maryland College Park.
- Ponterotto, J.G. (1990). Racial/ethnic minority and women students in higher education: A status report. New Directions for Student Services, 52, 45-59.
- Riehl, R. (1994). The academic preparation, aspirations, and first-year performance of first-generation students. College and University, 70(1), 14-19.
- Robyn, A, Klein, S., Carroll, S., & Bell, S. (1993). Programs to promote college attendance that combine services and financial aid (Report No. N-3581- LE). Santa Monica: RAND Institute on Education and Training.
- Rumberger, R. & Larson, K. (1998). Student mobility and increased high school dropout. American Journal of Education, 107(1), 1-35.

- Smith-Maddox, R. (1999). The social networks and resources of African American eighth graders: Evidence from the National Education Longitudinal Study of 1988. Adolescence, 34(133), 169-184.
- Snyder, T. (1997). Digest of education statistics. National Center for Education Statistics. Washington, DC: U.S. Department of Education.
- Schwartz, W. (1999a). School support for foster families. ERIC Clearinghouse on Urban Education. ERIC Clearinghouse on Urban Education Digest, 147. Retrieved June 22, 2002, from http://www.ed.gov/databases/ERIC_Digests/ed434189.html
- Schwartz, W. (1999b). Family diversity in urban schools. ERIC Clearinghouse on Urban Education. Urban Education Digest, 148. Retrieved January 22, 2002, from http://www.ed.gov/databases/ERIC_Digests/ed434188.html
- Terenzini, P., & Springer, L. (1996). First-generation college students: Characteristics, experiences, and cognitive development. Research in Higher Education, 37(1), p.1-22.
- Texas Higher Education Coordinating Board (1994). Access and equity 2000: The Texas educational opportunity plan for public higher education. Austin, TX.
- Texas Higher Education Coordinating Board (2002). Closing the gaps by 2015: 2002 progress report. Retrieved October 8, 2002, from <http://www.thecb.state.tx.us/AdvisoryCommittees/HEP/CGprogressRpt.pdf>
- Thayer, P. (2000, May). Retention of students from first-generation and low-income backgrounds. Opportunity Outlook.
- U.S. Bureau of the Census (1995). Current population reports. Washington, D.C.: U.S. Government Printing Office.
- U.S. Bureau of the Census (1997). Current population reports. Washington, D.C.: U.S. Government Printing Office.
- U.S. Bureau of the Census (1998). Current population reports. Washington, D.C.: U.S. Government Printing Office.
- U.S. Bureau of the Census (2000). Current population reports. Washington, D.C.: U.S. Government Printing Office.

- U.S. Bureau of the Census (2000). Population projections for states by age, sex, race, and Hispanic origin: 1995 to 2025. Washington, D.C.: U.S. Government Printing Office. Retrieved February 12, 2002, from <http://www.census.gov/population/www/projections/popproj.html>
- U.S. Bureau of the Census (2002). Population projections for states by age, sex, race, and Hispanic origin: 2025 to 2045. Washington, D.C.: U.S. Government Printing Office. Retrieved February 12, 2002, from <http://www.census.gov/population/www/projections/popproj.html>
- U.S. Bureau of Labor and Statistics (1992). College enrollment status and family income of recent high school graduates 16–24 years of age by sex, race, and Hispanic origin. Washington, D.C.: U.S. Government Printing Office.
- U.S. Bureau of Labor and Statistics (1993). College enrollment status and family income of recent high school graduates 16–24 years of age by sex, race, and Hispanic origin. Washington, D.C.: U.S. Government Printing Office.
- U.S. Bureau of Labor and Statistics (1994). College enrollment status and family income of recent high school graduates 16–24 years of age by sex, race, and Hispanic origin. Washington, D.C.: U.S. Government Printing Office.
- U.S. Department of Education (2001). The lost opportunity of senior year: Finding a better way. U.S. Department of Education. Washington, D.C.
- U.S. Department of Health and Human Services (2000). Report to the congress on kinship foster care. Retrieved February 12, 2002, from <http://aspe.hhs.gov/hsp/kinr2c00/index.htm>
- Vasquez, O., Pease-Alvarez, L., & Shannon, S. (1994) Pushing boundaries: Language and culture in a Mexicano community. New York: Cambridge University Press.
- Warburton, E., Bugarin, R., Nunez, A. (2001). Bridging the gap: Academic preparation and post-secondary success of first-generation students (NCES Report No. 2001-153). Washington, D.C.: National Center for Education Statistics.
- Wilson, R. & Justiz, M. (1987). Minorities in higher education: Confronting a time bomb. Educational Record, 68(4), 8–15.

Wilson, W. (1987). The truly disadvantaged: The inner city, the underclass and public policy. Chicago: The University of Chicago Press.

Wright, R. (1995). Logistic regression. In L.G. Grimm and P.R. Yarnold (Eds.). Reading and understanding multivariate statistics. Washington, D.C.: American Psychological Association.