CHAPTER ONE

Introduction

In an era of greatly reduced financial resources, many four-year institutions of higher education have adopted enrollment management techniques as a means of stabilizing student enrollment and related revenues (Britt & Hirt, 1999; Dennis, 1998). Traditionally, college administrators have viewed recruitment of students as the principal means to maintaining enrollments (Astin, 1975). A more contemporary approach, however, has emphasized the importance of student retention rates (Tinto, 1993).

The literature on college student attrition suggests that the number of students who leave colleges and universities prior to degree completion is greater than those students who stay (Tinto, 1993). For institutions, student attrition wastes limited educational resources and contributes to a loss of institutional credibility (Astin, 1975; Cope & Hannah, 1975). To stabilize enrollment and the revenues associated with tuition and fees, college administrators have directed their attention to the retention of students. While college administrators are concerned with retaining as many of their students as possible, an increasing amount of attention is being placed on transfer student retention (Eggleston & Laanan, 2001).

Recent years have seen a steady increase in the number of transfer students (Beckenstein, 1992; McCormick, 2003). Of the more than 1,000,000 students who graduated from United States colleges and universities in 1991, an estimated 325,000 had transferred from at least one institution to another during the course of their college careers (Institute for Research on Higher Education, 1995). More specifically, thousands of community college students each year transfer to four-year colleges or universities (Kozeracki, 2001). With transfer students comprising approximately half of the student body at some public, four-year institutions, higher education

administrators increasingly are exploring how to best meet the needs of this particular student population in an effort to retain these students (Eimers & Mullen, 1997). To retain transfer students, however, one must first understand why they leave higher education.

The research on college student persistence in general suggests that students must adjust to their college environment and integrate themselves both academically and socially (Tinto, 1988, 1993). Persistence research focusing on transfer students also indicates the importance of student adjustment. In one study using data from the 1971-1980 Cooperative Institutional Research Program (CIRP) surveys, the persistence of a sample of community college transfer students at four-year colleges and universities was examined. The researchers found that being academically and socially integrated into the four-year college or university was indicative of persistence to degree (Pascarella, Smart, & Ethington, 1986). Transfer students as a group, however, appear to have difficulty adjusting and integrating themselves into their new collegiate environment.

Substantial research exists on the difficulties transfer students experience (Bauer & Bauer, 1994; Cejda, 1994; Davies & Casey, 1999; Diaz, 1992; Eggleston & Laanan, 2001; Harbin, 1997; Jacobs, Busby, & Leath, 1992; Laanan, 2001; Lee, 2001; Pascarella et al., 1986; Townsend, 1995; Vaala, 1991). These difficulties directly relate to persistence rates for transfer students (Walker, 1996). A review of the literature suggests that the difficulties encountered by transfer students can be characterized as social, personal, environmental, or academic challenges.

Social integration is an important aspect of the transition process for transfer students (Pascarella et al., 1986). Transfer students have reported concerns about making new friends (Bauer & Bauer, 1994; Vaala, 1991). In one study, many students reported feeling isolated and alone on campus (Harbin, 1997). Some research suggests that since many transfer students are

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commuter students, they may have fewer opportunities or be less willing to socially integrate themselves into the institution (Kodama, 2002; Tierney, 1992). Other concerns cited by transfer students are opportunities for extracurricular involvement in clubs and organizations and opportunities for dating (Walker, 1996).

Transfer students also must deal with personal adjustments during their transition process. Financial issues such as increased costs and lack of financial aid and work opportunities are cited as concerns by transfer students (Jacobs et al., 1992; Vaala, 1991). Transfer students also report concerns with the lack of general information they receive from the new institution and often feel uninformed (Lee, 2001). Other personal concerns for transfer students include finding roommates and feeling out of place (Walker, 1996).

The new campus itself poses an element of difficulty for transfer students in their transition process. Students need time to become familiar with their new environment. They may have difficulty locating buildings, classrooms, or student services offices (Vaala, 1991). For community college transfer students coming to larger four-year institutions, the shock becomes even greater as students encounter parking problems, crowds, and lines (Davies & Casey, 1999). Additionally, the classroom environment can be challenging for transfer students. Community college transfers in particular often cite concerns with the lack of individual attention and amount of interaction with faculty and staff at four-year institutions (Davies & Casey, 1999; Vaala, 1991).

The most widely studied topic related to transfer student adjustment, however, is academic integration (Pascarella et al., 1986). Some research has indicated that community college transfer students have difficulty with and are underprepared for the rigorous curriculum at four-year institutions (Townsend, 1995). As a result of difficulty with academic integration,

transfer students have been said to experience a so-called "transfer shock", a decrease in grade point average (GPA) between the last semester at their former institution and the first semester at their new institution (Cejda, 1994; Diaz, 1992; Jacobs et al., 1992; Rhine, Milligan, & Nelson, 2000). Conflicting results however have been reported about GPA after transfer. Some researchers cite no significant changes or even an increase in GPA, a so-called "transfer ecstasy" (Laanan, 2001; Miller, Janawsky, & Katz, 1977). Studies of two-year college transfer students have also revealed lower persistence rates, graduation rates, and academic achievement at four-year colleges (Bauer & Bauer, 1994; Holahan, Green, & Kelley, 1983; Vaala, 1991).

While considerable research exists on the academic integration and achievement of transfer students, such studies have often been limited in scope. The research on transfer students has been devoted to comparing transfers to first year students (Miville & Sedlacek, 1995) and students who originated and continued enrollment at the same institution, so-called "native students" (Carlan, 2001; Glass & Harrington, 2002; Holahan et al., 1983; Institute for Research on Higher Education, 1995; Keeley & House, 1993). The data examining transfer students alone is often simply descriptive, providing information on degrees, GPAs, and demographic characteristics. Furthermore, this descriptive research is often focused on students who transfer from a particular community college or community college system and who move into the state university system (Arnold, 2001; Best & Gehring, 1993; Head, 1993; Johnson-Benson, Geltner, & Steinberg, 2001; Miller et al., 1977).

Research that examines the variables that may predict transfer student academic success is limited. Of the studies that do examine predictive variables, only transfers from community colleges are considered, while transfer students from other four-year colleges and universities are excluded (Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holton, 1991; Minear, 1998;

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Townsend, McNerny, & Arnold, 1993; Walker, 1992). Furthermore, these studies have not been consistent in the variables selected for analysis. This study was designed to address these gaps in the existing body of work on predictive variables of transfer student success.

Purpose of the Study

The purpose of this study was to determine the value of select factors in predicting the academic success of undergraduate transfer students in their first and second semesters of enrollment: (a) on-campus residency, (b) ethnicity, (c) gender, (d) domicile (in v. out of state), (e) Scholastic Aptitude Test (SAT) scores, (f) number of credits enrolled in during the first semester, (g) academic college, (h) class standing, (i) last prior institution (two-year v. four-year), and (j) previous GPA. First semester Grade Point Average (GPA) was included as an additional independent variable in the examination of second semester GPA.

The data analyzed in the study were collected in 2002 at a research institution in the mid-Atlantic region and were accessed through the student census file. This study defined academic success as first and second semester GPA, which were used as dependent variables.

Research Questions

This study examined the following research questions:

1. What are the contributions of each variable in explaining the variance in transfer students' first semester GPAs?

2. What are the contributions of each variable in explaining the variance in transfer students' second semester GPAs?

Significance of the Study

This study had significance for future practice, research, and policy. In terms of practice, many university constituencies may be interested in the study. College admissions counselors

might benefit, as the study provided them with data about variables contributing to academic success of transfer students. Better understanding of academic success variables for transfer students may allow admissions counselors to better determine which transfers to accept based on who is more likely to succeed at the institution.

Transfer students might also benefit from the information about academic success variables. If they have a better understanding of the variables that impact academic success, they may be more likely to participate in some of the programs and services offered by universities that are designed to enhance their success.

Academic advisors and academic support personnel could use the information on predictors of academic success when designing programs for transfer students. When advisors and administrators understand the relationship between certain variables and academic success, they may be better able to serve this specific student population.

This study also had significance for future research. I examined predictor variables of academic success of transfer students at a single, public, research institution. Future studies may explore predictor variables of academic success of transfer students at different types of institutions (e.g., private institutions, liberal arts colleges). Such a study would expand the knowledge base about predictor variables for transfer student academic success in general.

Future studies may also explore the relationship between predictor variables for academic success of transfer students and variables contributing to the academic success of first year students. Such a study would contribute to the knowledge base about different types of college transition and the contributing academic success variables.

Future research could also identify the psychological and external factors that also might influence the educational attainment of transfer students. Such a study would expand the

knowledge base about academic success variables of transfer students by providing a broader examination of factors related to academic achievement.

This study also had significance for policy. College housing administrators might use the results of the study to determine how contributions of on-campus housing explain transfer student academic success. College housing administrators might use these findings to assess whether their own institution's housing policies for transfer students are sufficient.

Those responsible for creating articulation agreements between community colleges and four-year institutions also may benefit from the findings of this study. Policymakers might use these findings to assess whether current articulation policies related to transfer students address transition issues sufficiently.

Finally, enrollment managers might use the results of the study. The findings provided them with predictor variables of transfer student academic success. The administrators might use these results to create policies that will assist in the retention of transfer students.

Delimitations

Like all studies, this research had some initial delimitations. One delimitation to the study related to the sample. All participants were students at one research institution. It is possible that students at this institution differed in some important way from students at other schools. If so, the results might have been skewed.

Another delimitation to the study related to methodology. Only certain variables were selected for analysis. Other potentially important variables related to transition may have been omitted. If so, that could have affected the findings.

A third delimitation to the study also related to the methodology. The census data includes codes for up to six prior institutions for transfer students. For purposes of this study,

only the last prior institution was included. If all possible institutions were analyzed, results might have been different.

Despite these delimitations, this was an important study. It provided additional information about the variables predictive of transfer student academic success.

Organization of the Study

The present study is organized in five chapters. Chapter One provided an introduction to the study, and the study's purpose, significance, and research questions. In Chapter Two, the relevant literature is reviewed. Chapter Three describes the methodology including sampling and data analysis procedures employed in the study. Chapter Four presents the results of the study while Chapter Five discusses those results and their implications for future practice and research.

CHAPTER TWO

Literature Review

In order to explore the contributions of each variable in explaining the variance in transfer students' GPAs, it was necessary to examine two bodies of research. First, the literature on characteristics of transfer students was explored. Three groups of studies emerged in this review: studies comparing transfer students to first-year freshmen; studies comparing transfer students to native students; and studies on the diversity of transfer students. Second, the literature on variables associated with academic success of transfer students was examined. These include on-campus residency, SAT scores, number of credits enrolled in during a semester, academic college, ethnicity, class standing, gender, last prior institution, and previous GPA. The literature review is organized around these major categories and their respective subtopics.

Characteristics of Transfer Students

While a significant amount of research has been conducted on transfer students, much of this research has been devoted to comparing transfers to other student populations. Research has been conducted on whether transfers differ from first-time freshmen (Belcheir, 1999, 2001; Cope & Hannah, 1975; Durio, Helmick, & Slover, 1982; Eimers & Mullen, 1997; Feldman, Sedlacek, & Wright, 1975; Houmes, Geren, & Jackson, 1973; Jacobs et al., 1992; Lorentz & Benedict, 1996; Miville & Sedlacek, 1995; Owen, 1991). Other studies have explored the differences between transfer students and native students (Carlan, 2001; Cohen & Brawer, 1987; Glass & Harrington, 2002; Holahan et al., 1983; Keeley & House, 1993; Lunneborg & Lunneborg, 1976; Pascarella, 1999; Richman, 1979). Finally, literature on the transfer student population also examines the great diversity within the group itself (Eggleston & Laanan, 2001; Graham & Hughes, 1994; Miville & Sedlacek, 1995; Wawrzynski & Sedlacek, 2003).

Transfer Students Versus First-Time Freshmen

Historically, transfer students have been compared with first-time freshmen in discussions of adjustment issues (Cope & Hannah, 1975). A review of the literature reveals that transfer students and first-time freshmen typically cite similar entry level needs (Houmes et al., 1973). In one study, both transfer students and first-time freshmen ranked advisement, registration, and being able to take courses when needed among their most important concerns upon entering the university. Only minor differences overall were observed between the two student populations in the study. For instance, first-year freshmen expressed anxiety about study skills. Transfer students did not mention study skills, but instead talked about transferability of credit concerns (Houmes et al., 1973).

More recent research indicates that while transfers and first-time freshmen share similarities, there are also differences between these two groups. The literature reveals differences between transfer students and freshmen in demographics (Belcheir, 1999; Feldman et al., 1975), academic background (Miville & Sedlacek, 1995), expectations of college (Jacobs et al., 1992; Miville & Sedlacek, 1995), degree aspirations (Feldman et al., 1975; Miville & Sedlacek, 1995), academic performance (Durio et al., 1982; Lorentz & Benedict, 1996; Owen, 1991), and graduation rates (Belcheir, 1999, 2001; Eimers & Mullen, 1997; Owen, 1991).

Demographic differences have been explored between transfer students and freshmen. Studies indicate that transfer students are more likely than freshmen to be married (Feldman et al., 1975) and are typically older than freshmen. In one study, the average transfer student was four years older than the average first-time freshman (Belcheir, 1999). Transfer students are also more likely to live farther from campus than freshmen. In fact, freshmen are significantly more likely to live on campus than transfer students (Feldman et al., 1975).

Transfer students also differ from freshmen in academic background. First-time freshmen, for example, are more likely than transfer students to have been in the top 5% or 10% of their high school class (Miville & Sedlacek, 1995). Additionally, more freshmen than transfer students have parents who attended college (Miville & Sedlacek, 1995). Interestingly, some scholars have found that more transfer students than freshmen have siblings who have previously attended college for at least one year (Miville & Sedlacek, 1995).

Transfer students and freshmen also differ in their expectations of college. When asked in one study to predict the easiest aspects of adjusting to college life, significantly more transfer students than freshmen named earning satisfactory grades and studying efficiently (Miville & Sedlacek, 1995). Transfer students generally feel more academically prepared for college and have stronger vocational and academic goals than typical first-time freshmen (Jacobs et al., 1992). Ironically, some research indicates that transfer students are more likely than first-time freshmen to encounter academic difficulties (Jacobs et al., 1992).

Scholars have also found differences in degree aspirations between transfer students and freshmen. For example, freshmen in one study were more likely to indicate an interest in pursuing professional degrees such as medical or law degrees (Feldman et al., 1975). More recent research has found similar results. In one study, transfer students primarily indicated interest in obtaining bachelor's or master's degrees, whereas freshmen were more likely to indicate interest in pursuing doctoral, law, or medical degrees (Miville & Sedlacek, 1995).

General comparisons have been made between the academic performance of transfer students and freshmen (Belcheir, 1999; Owen, 1991). These studies have produced conflicting results. Some studies have found transfer students earn higher grades their first semester than freshmen. For example, in a study at one university, transfer students' average first semester

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GPA was 2.40 while the average first semester GPA for freshmen was 2.17 (Belcheir, 1999). Other studies suggest that freshmen attain higher academic achievement than transfer students. For instance, in comparison to freshmen students, the transfer cohort in one study had a lower percentage of students attaining a 2.0 GPA or higher in their first year at the four-year institution (Owen, 1991).

Scholars have also compared the academic performance of transfer students and first-time freshmen in specific academic fields (Durio et al., 1982; Lorentz & Benedict, 1996). Results of these studies are also mixed. In an examination of transfer students and entering freshmen in a college of business, freshmen graduated more quickly than transfer students, but transfer students earned significantly higher GPAs (Lorentz & Benedict, 1996). Of transfer students and first-time freshmen majoring in engineering at one university, freshmen in general outperformed transfer students. Female transfer students, however, did better than freshmen female engineers (Durio et al., 1982).

Differences in the graduation rates between transfer students and freshmen have also been explored in the literature. Again, findings have varied. Some studies have found that transfer students overall have a lower graduation rate compared to freshmen (Eimers & Mullen, 1997; Owen, 1991). Other studies suggest that transfer students have consistently higher graduation rates (Belcheir, 1999, 2001). These higher graduation rates have been attributed to the number of credits transfer students bring with them to the four-year institution and also prior knowledge and experience of what to expect in college (Belcheir, 1999).

Transfer Students Versus Native Students

Extensive literature also exists that compares transfers to native students as a whole. Research in this area primarily focuses on differences in demographics (Cohen & Brawer, 1987;

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Jacobs et al., 1992; Pascarella, 1999; Piland, 1995; Richman, 1979), academic background (Keeley & House, 1993; Lunneborg & Lunneborg, 1976; Townsend, 1994, 1995), and differences in academic achievement as defined by GPA and graduation rates (Best & Gehring, 1993; Carlan & Byxbe, 2000; Graham & Dallam, 1986; Holahan et al., 1983).

Researchers have reported consistent demographic differences between transfer students and native students. Compared with native university students, transfers are generally older (Cohen & Brawer, 1987; Jacobs et al., 1992; Pascarella, 1999; Piland, 1995). For instance, in one study community college transfers ranged in age from 16 to 49, with the mean age when transferring varying from 22 to 26 (Piland, 1995). Transfer students are also more likely than native students to attend college part-time, be married, have children, and work a part- or full-time job (Cohen & Brawer, 1987; Jacobs et al., 1992; Richman, 1979).

Differences in academic background between transfer students and native students have also been examined. When making comparisons with native students as a whole, community college transfer students tend to be less confident in their academic abilities. Community college transfer students also have lower academic ability and motivation than native students (Lunneborg & Lunneborg, 1976). A review of the literature suggests that community college transfer students in particular are academically unprepared for the demands of four-year institutions (Keeley & House, 1993; Lunneborg & Lunneborg, 1976; Townsend, 1994, 1995).

In addition, the literature on transfer and native students explores differences in academic achievement. Some studies suggest that transfer students have, at least initially, inferior academic achievement. For instance, in one study transfer students from both community colleges and four-year colleges were more likely to be on academic probation than native students (Graham & Dallam, 1986).

In examining academic achievement, scholars have explored GPA differences between transfer students and native students. Studies in this area have produced somewhat mixed results. Holahan et al. (1983) found significant differences in final college GPA, but these differences were based on the transfer students' former institution. Transfer students from other four-year institutions and native students performed comparably, with similar final GPAs. Community college transfer students had significantly lower GPAs than both groups of students (Holahan et al., 1983).

Differences in GPA between transfer students and native students have also been associated with class standing at time of transfer (Best & Gehring, 1993). In one study, students transferring with more than 60 credits (junior status) performed as well as native university juniors. Conversely, transfer students with fewer than 60 credits earned significantly lower GPAs than native students (Best & Gehring, 1993).

Other studies have found no significant GPA differences between transfer students and native students after the initial transfer shock. Carlan and Byxbe (2000) compared the upper division coursework GPAs of community college transfer students and native students. Upper division GPA was defined differently for transfer students and native students. For transfer students, upper division GPA was the cumulative GPA earned by transfer students at the four-year college. For native students, upper division GPA was the cumulative GPA earned beginning with the first semester following the semester in which the student had earned 54 credit hours. While the transfer students experienced an initial decrease in GPA or so-called transfer shock, their grades improved and resembled the grades of native students by graduation (Carlan & Byxbe, 2000).

The literature on academic achievement among transfer students and native students also examines graduation rates (Best & Gehring, 1993; Holahan et al., 1983). Again, conflicting findings exist. In a study of community college transfer students and native students at one university, the native students graduated at a much higher rate than the transfer students (Best & Gehring, 1993). Other studies suggest that there are no differences in graduation rates, however. In a longitudinal study, transfer students were as likely to graduate as native students (Holahan et al., 1983).

Diversity of Transfer Students

Transfer students are often compared with other student populations. These comparisons, while providing some information about transfer students, are nevertheless limited in scope for they ignore the diversity within the transfer student population. Transfer students are a unique population, differing not only from other student populations but among themselves as well (Eggleston & Laanan, 2001; Graham & Hughes, 1994; Miville & Sedlacek, 1995; Wawrzynski & Sedlacek, 2003). In most studies, transfer students are simply grouped together based on one shared experience—making a transition from one institution to another.

The literature demonstrates that transfers are a diverse population. They have different demographic characteristics. They come from a wide range of economic, ethnic, and cultural backgrounds (Kodama, 2002). They differ in age and gender (Eggleston & Laanan, 2001; Miville & Sedlacek, 1995). Transfer students also come from a wide range of educational backgrounds (Kodama, 2002). They come from both two- and four-year institutions, with different numbers of credit hours (Eggleston & Laanan, 2001; Miville & Sedlacek, 1995).

Transfer students also have different experiences when transferring into a new institution (Wawrzynski & Sedlacek, 2003). Performance trends of community college students, for

example, vary from institution to institution, from state to state, and even within institutions (Graham & Hughes, 1994). To better understand transfer students and, more specifically, the academic achievement of transfer students, scholars have examined variables associated with transfer student academic success.

<div align="center">Variables Associated With Academic Success of Transfer Students</div>

Scholars have examined many different variables in relation to transfer students. The following variables have been explored in the research on transfer student academic performance: (a) on-campus residency, (b) ethnicity, (c) gender, (d) SAT scores, (e) number of credits enrolled in during the respective semester, (f) academic college, (g) class standing, (h) last prior institution (two-year v. four-year), and (i) previous GPA.

On-Campus Residency

General research has been conducted on the educational benefits of living in residence halls. Students in residence halls are more likely to persist than commuters (Astin, 1973). In addition, living in residence halls has also been linked to earning higher GPAs (Chickering, 1974). Studies on the educational benefits of living in residence halls for transfer students specifically, however, have not supported earlier research.

Research on the effects of on-campus residency for transfer students suggests that living on campus does not foster academic success. For example, in a study of Maryland community college transfer students enrolling at the University of Maryland, College Park, students who did not request on-campus housing were more likely to achieve high GPAs (Holton, 1991). It appears that high-achieving transfer students typically live off-campus even when residential housing opportunities are available (Walker, 1992).

In another study, transfer students living in residence halls were compared to other groups of transfer students (students living in their family home or the home of a relative, students living in a fraternity or sorority house, and commuter students.) The transfer students living in residence halls earned the lowest GPAs (Graham & Hughes, 1994).

Ethnicity

Scholars have also studied ethnicity as a predictor of transfer student academic success. The literature overall suggests that grades for White transfer students are higher than those for minority transfer students (Carlan & Byxbe, 2000; Holahan et al., 1983). Minority groups also are significantly less likely to earn first semester GPAs of 3.0 or greater after transferring to a four-year institution (Holton, 1991). In one study, White community college transfer students earned nearly one-quarter of a letter grade more than Black community college transfer students (Carlan & Byxbe, 2000). In an examination of community college transfers and four-year college transfers, White students again earned significantly higher GPAs than Mexican-American and Black transfer students. Mexican-American students also earned significantly higher GPAs than Black students (Holahan et al., 1983).

Research on ethnicity as a predictor of transfer student academic success, however, has been mixed. Other studies have not identified a significant relationship between ethnicity and academic success (Graham & Hughes, 1994; Minear, 1998). In addition, some scholars suggest that ethnicity results should be interpreted carefully due to the smaller numbers of minority groups, specifically Blacks, transferring to four-year institutions (Graham & Hughes, 1994; Holahan et al., 1983; Walker, 1992).

Gender

Studies of gender as a predictor of transfer student academic success have produced conflicting conclusions. Some research reveals a relationship between gender and academic success. In all cases, female transfer students earned significantly higher GPAs than male transfer students (Al-Sunbul, 1987; Carlan, 2001; Durio et al., 1982; Holahan et al., 1983; Minear, 1998; Walker, 1992). On the other hand, some research suggests non-significant differences between the academic achievement of female and male transfer students (Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holton, 1991).

SAT Scores

Of the modest research addressing SAT scores as a variable associated with transfer student academic success, SAT scores were found to be a significant factor (Minear, 1998). Typically, studies of transfer students tend to examine American College Testing (ACT) scores (Al-Sunbul, 1987; Carlan & Byxbe, 2000; Graham & Hughes, 1994) or a score based on the combination of high school class rank and the percentile of either the ACT composite score or SAT verbal and math percentiles (Townsend et al., 1993).

Findings on ACT scores and combination scores of class rank and percentile on a college entrance examination have produced mixed results. Studies suggest that ACT composite scores are not significant factors in predicting transfer student academic success (Carlan & Byxbe, 2000; Graham & Hughes, 1994). Conversely, in a study examining predictors of transfer student academic success, the second most significant predictor after previous GPA was a student's College Aptitude Rating, a combination score of high school class rank percentile and the percentile of either the ACT composite score or SAT Verbal and Math percentile (Townsend et al., 1993).

In general, the literature on college entrance examinations suggests that one should use caution when interpreting results. Studies conducted by Morgan, Paszczyk, and Phillippi (as cited in Carlan & Byxbe, 2000) indicate that while standardized measures are highly correlated with the early college years, they are not significant factors for junior and senior performance. Additionally, standardized tests might be more appropriate predictor variables for different student groups. For example, SAT scores appear not to be as strong a predictor for Black students' GPAs as they are for White students' GPAs (Nettles, Thoeny, & Gosman, 1986).

Number of Credit Hours Enrolled in During a Semester

With few exceptions (Carlan & Byxbe, 2000; Holton, 1991), there is a relative dearth of research on the relationship between transfer student academic success and the number of credit hours in which such students are enrolled during a semester. Studies that have been conducted on this relationship have produced mixed results.

Some research has suggested that the number of credit hours transfer students enroll in during a semester is a significant predictor of their academic success (Holton, 1991). In an examination of community college transfer students at one university, transfer students attempting 12 credit hours or fewer the first semester after transfer were significantly more likely to earn first semester university GPAs of 3.0 or greater.

Other research indicates that the number of credit hours in which transfer students enroll during a semester is not of significant value in discussions of academic success (Carlan & Byxbe, 2000). In a study of community college transfers at one university, full-time or part-time enrollment status did not contribute significantly to transfer student academic success (Carlan & Byxbe, 2000).

Academic College

While academic college has not been specifically studied as a predictor of transfer student academic success, transfer students' choice of major at the four-year college or university has been examined by several scholars (Carlan, 2001; Cejda, Kaylor, & Rewey, 1998; Holton, 1991; Rhine et al., 2000). Many of these studies examine the prevalence of transfer shock in specific majors. While some research indicates that community college transfer students in all majors experience transfer shock, there is great variation in the declines of mean GPA among majors (Cejda et al., 1998; Keeley & House, 1993; Richardson & Doucette, 1980).

Transfer shock occurs primarily in students majoring in business, science, and mathematics (Carlan, 2000; Cejda et al., 1998; Rhine et al., 2000). Conversely, transfer students majoring in education, fine arts, humanities, and other social sciences often experience an increase in GPA after transferring to a four-year institution (Cejda et al., 1998; Rhine et al., 2000).

Studies using a more specific group of transfer students have supported these findings. For instance, in a study of adult transfer students (25 years and older), those students studying education and psychology experienced the smallest degree of transfer shock. Students majoring in science and business, on the other hand, experienced the greatest amount of transfer shock and lower GPAs (Carlan, 2001).

Some scholars posit that student-faculty collaboration has an impact upon transfer shock (Cejda, 1994). Student-faculty collaboration typically occurs more in fields like education. Since transfer students majoring in education have been among the high-achieving transfer students in the research, some suggest that student-faculty collaboration in these fields reduces the amount of transfer shock (Cejda, 1994).

Not all studies, however, support the relationship between transfer students' majors and their academic performance at the four-year institution (Holton, 1991). In a study examining the factors contributing to the high academic success of certain community college transfer students at a research university, choice of major was not found to be associated with academic success. However, a cross-tabulation of college major by gender showed a significant discrepancy in distribution with females and males clustered disproportionately in different academic colleges (Holton, 1991). Most likely, this disproportionate gender distribution among majors influenced the results.

Furthermore, while research demonstrates GPA differences among majors, not all of those differences are statistically significant. Cejda et al. (1998) explored the relationship between community college transfer students' majors and their academic achievement at a private, liberal arts college. Transfer students majoring in mathematics, sciences, business administration, and journalism experienced GPA declines, but only the mathematics and sciences declines were statistically significant. Fine arts, humanities, and social sciences majors experienced GPA increases, but none of the increases was statistically significant (Cejda et al., 1998).

Class Standing

Class standing (eg. sophomore, junior, senior) at the time of transfer has also been explored. Transfer student academic success is generally associated with higher total numbers of credit hours being brought to the four-year institution. Some studies have found that students who transfer later, for example as juniors rather than sophomores, experience less transfer shock and achieve higher GPAs (Best & Gehring, 1993; Walker, 1996). Some scholars speculate that

the higher GPAs of upperclass transfer students can be attributed to their having acquired some additional skills that their earlier-transfer counterparts did not develop (Best & Gehring, 1993).

Other studies support these findings. In his examination of adult transfer students, Carlan (2001) found that for every one credit hour earned at the community college, students' university GPA increased by one-hundredth of a point. Additionally, receipt of an associate of arts (AA) degree from a community college is associated with transfer student academic success in some studies (Graham & Hughes, 1994).

Other data contradict these findings. Some studies suggest that no significant relationship exists between class standing and transfer student academic success (Al-Sunbul, 1987; Carlan & Byxbe, 2000). In addition, AA degree attainment is not considered significant in some research, and in some cases, has been linked to lower GPAs (Carlan, 2001; Carlan & Byxbe, 2000). Other studies, while acknowledging differences in GPAs, claim that these findings are not statistically significant (Holton, 1991).

Last Prior Institution

The literature on the relationship between last prior institution and transfer student academic success primarily focuses on community college attendance and its resulting transfer shock effect (Cejda, 1994; Diaz, 1992; Jacobs et al., 1992; Rhine et al., 2000). Community colleges have been criticized for grade inflation and watered down curricula, causing transfer students to experience transfer shock at the more demanding four-year institutions (McGrath & Spear, 1991). For example, in one study, community college faculty members were a letter grade more lenient in grading than four-year faculty (Rachal, 1984).

In a meta-analysis of transfer shock literature, Diaz (1992) found that community college transfer students in 79% of the studies experienced transfer shock. Of the studies in which

community college students experienced transfer shock, 67% reported that students recover from transfer shock usually within the first year after transfer (Diaz, 1992). While several studies suggest that not all community college transfer students experience transfer shock (Laanan, 2001; Miller et al., 1977), since transfer shock has been a typical phenomenon in the literature, community college transfer students are often viewed as academically at-risk (Diaz, 1992).

With few exceptions (Holahan et al., 1983; Holahan & Kelley, 1978), there is a relative dearth of research directly examining the relationship between academic success and transferring from a community college versus another four-year institution. The studies that have been conducted, however, suggest that community college transfer students are underprepared for the transition to a four-year institution.

In a study of transfer students at a large southwestern university, community college transfer students earned lower grades than students who transferred from other four-year colleges (Holahan & Kelley, 1978). In a follow-up longitudinal study, transfer students coming from other four-year institutions earned significantly higher GPAs than community college transfer students. In fact, when examining final GPAs, transfers from other four-year institutions performed comparably with native students (Holahan et al., 1983).

Scholars have also explored the impact of community college versus four-year institution attendance on academic achievement in particular areas of study. In an examination of engineering transfer students, prior institution had an effect on academic performance. Students who transferred from other four-year institutions experienced greater academic achievement than transfer students from community colleges (Durio et al., 1982).

Other scholars propose that the difference in academic success potential between community college and four-year institution transfer students may not be so great. Transfer

students from both community colleges and four-year institutions have been found to be more likely to end up on academic probation than native students (Graham & Dallam, 1986). Additionally, Holmstrom and Bisconti (as cited in Miller et al., 1977) suggest that the phenomenon of transfer shock may not be so much related to community college attendance, but rather differences in grading practices among different institutions of higher education, irrespective of type (community college or four-year institution).

Furthermore, some research indicates that transferring from a four-year institution can be detrimental in its own right (Astin, 1975). In general, transferring from one four-year institution to another substantially increases the chances of dropping out of higher education altogether. Whether or not this attrition is directly related to lack of academic success is unclear (Astin, 1975).

Previous GPA

Among all the research on transfer student academic success, previous GPA is the most consistent and reoccurring variable. When examining previous GPA, however, scholars tend to focus only on community college transfer students. Scholars often find previous GPA to be a significant variable in community college transfer student academic success. Higher GPAs at the community college tend to enhance transfer student academic success (Carlan, 2001; Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holahan & Kelley, 1978; Miller et al., 1977; Minear, 1998). In fact, many studies reveal that previous GPA has a higher correlation with academic performance after transferring than any other factor (Holton, 1991; Townsend et al., 1993).

Though research has reported that community college GPA is a significant variable in predicting transfer student academic success, the results are somewhat mixed. One study did not find transfer GPA as having a significant impact on transfer student achievement (Al-Sunbul,

1987). However, this study was limited to one community college and one four-year institution, so the results may not be generalizable to the academic achievement of other transfer students elsewhere. One possible explanation given in the literature for Al-Sunbul's unique finding is that there might be optimal relations between those particular institutions in the study that are not present at other institutions (Walker, 1996).

Summary

The review of literature on transfer students reveals that researchers often tend to compare transfer students with other student populations. Transfer students have been compared to first-year freshmen (Belcheir, 1999, 2001; Cope & Hannah, 1975; Durio et al., 1982; Eimers & Mullen, 1997; Feldman et al., 1975; Houmes et al., 1973; Jacobs et al., 1992; Lorentz & Benedict, 1996; Miville & Sedlacek, 1995; Owen, 1991) and also to native students (Carlan, 2001; Cohen & Brawer, 1987; Glass & Harrington, 2002; Holahan et al., 1983; Keeley & House, 1993; Lunneborg & Lunneborg, 1976; Pascarella, 1999; Richman, 1979). While these comparisons have provided some knowledge of transfer students, they are nevertheless limited in scope for they do not fully capture the diversity among transfer students.

To more fully explore transfer students, and more particularly their academic success, scholars have examined several variables in relation to academic achievement. The literature examines on-campus residency as a variable of transfer student academic success (Graham & Hughes, 1994; Holton, 1991; Walker, 1992). Modest research has also been conducted on SAT scores (Minear, 1998) and number of credit hours enrolled in during a semester (Carlan & Byxbe, 2000; Holton) as indicators of future academic achievement of transfer students.

Academic college has not been specifically addressed in the research, but academic major has been explored (Carlan, 2001; Cejda et al., 1998; Holton, 1991; Rhine et al., 2000). Ethnicity

(Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holahan et al., 1983; Holton, 1991; Walker, 1992), class standing (Al-Sunbul, 1987; Best & Gehring, 1993; Carlan, 2001; Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holton, 1991; Walker, 1996), and gender (Al-Sunbul, 1987; Carlan, 2001; Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holahan et al., 1983; Holton, 1991; Minear, 1998; Walker, 1992) are also examined in the research on transfer student academic success.

Last prior institution of attendance is also highlighted in the literature on transfer student academic achievement (Astin, 1975; Cejda, 1994; Diaz, 1992; Graham & Dallam, 1986; Holahan et al., 1983; Holahan & Kelley, 1978; Jacobs et al., 1992; Laanan, 2001; Miller et al., 1977; Rhine et al., 2000). The most frequently recurring variable in the literature, however, is previous GPA (Al-Sunbul, 1987; Carlan, 2001; Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holahan & Kelley, 1978; Holton, 1991; Miller et al., 1977; Minear, 1998; Townsend et al., 1993).

Studies on predictor variables of transfer student academic success (Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holton, 1991; Minear, 1998; Townsend et al., 1993; Walker, 1992) have not been consistent in the variables selected for analysis. In addition, studies have continued to produce mixed results. Furthermore, transfer students from other four-year institutions are often excluded from these studies. The present study expanded on the existing body of knowledge by further examining these variables in the literature and also including transfer students from other four-year institutions in the examination.

CHAPTER THREE

Methodology

The purpose of this study was to determine the value of select factors in predicting the academic success of undergraduate transfer students in their first and second semesters of enrollment: (a) on-campus residency, (b) ethnicity, (c) gender, (d) domicile, (e) SAT scores, (f) number of credits enrolled in during the first semester, (g) academic college, (h) class standing, (i) last prior institution, and (j) previous GPA.

This study employed stepwise multiple regressions using the above factors as independent variables. First semester GPA was included as an additional independent variable for analysis for second semester GPA. Participants were students coded as entering undergraduate transfer students in the university's student census file during the fall of 2002. Students' first and second semester GPAs were used as the dependent variables representing academic achievement. Specifically, this study was designed to explore two research questions:

1. What are the contributions of each variable in explaining the variance in transfer students' first semester GPAs?

2. What are the contributions of each variable in explaining the variance in transfer students' second semester GPAs?

This chapter describes the methodology employed in the study including sample selection and the data source. Procedures used to analyze the data are also discussed.

Sample

The population involved in this study was all students coded in the university's student census file as entering undergraduate transfer students during the fall of 2002 at a large, public,

research institution located in a mid-Atlantic state. According to the university's student census file, the total enrollment of fall 2002 transfer students was 622 students.

Data Source

This study used an extract of the university's student census file database created by the Office of Institutional Research and Planning Analysis. The extract included all students enrolled at the institution's main campus for one or more credit hours and included students at all levels of study. For purposes of the study, I selected only those students coded as undergraduate transfer students in the census file.

The extract student census file provided information on a number of demographic characteristics, including students' gender and ethnicity. Academic characteristics were also included in the census file such as SAT scores. In addition, the student census file provided information on the number of credit hours in which the student was enrolled in the fall of 2002, whether or not the student lived in a residence hall, the student's academic college, the student's class standing, and the most recent institution the student attended before transferring to the university where the study was conducted.

Data Analysis Procedures

Prior to the start of this study, I submitted a Request for Exemption of Research Involving Human Subjects to the Institutional Review Board Office of Research Compliance. The reviewer concurred that there was minimal risk involved to the participants in this study and the exemption request was granted. Once approval was granted, I obtained the extract of the university's student census file from the Director of Planning and Assessment in the Division of Student Affairs at the institution where the study was conducted.

Before analyzing the data, I needed first to clean the dataset. Since the extract included all students at the main campus of the institution, I needed to select only those coded as undergraduate transfer students. Next, I inspected the dataset to identify cases that were anomalous. Three of the participants were removed from the sample after the census file revealed that these students had the current institution listed as their last transfer institution. After eliminating those cases, the sample included 619 transfer students.

Since the student census file was coded in a way that would not work for purposes of this study, I recoded the data. Interval or ratio data such as SAT scores, previous GPA, and number of credits attempted, I left alone. I recoded the remaining variables of interest into binary variables. For example, within the existing student census file, the academic colleges were coded as 1-10. To convert the academic colleges into binary variables, I recoded the different academic college variables as Engineering, 1 = yes, 0 = no; Science, 1 = yes, 0 = no, etc. I recoded on-campus residency, ethnicity, gender, class standing, and domicile in the same manner. Additionally, I converted last prior institution into two different binary variables, creating a separate variable for each specific institution from which a student transferred and also creating a variable for two-year v. four-year institutions.

After the student census data were recoded, I merged the data file with the university's fall grade file and computed grades for each participant. To answer the first research question I performed a step-wise regression analysis. I used on-campus residency, SAT scores, number of credits enrolled in during the first semester, academic college, ethnicity, class standing, gender, last prior institution, and previous GPA as independent variables and Fall GPA as the dependent variable.

To answer the second research question, I merged the data file with the university's spring grade file and computed grades for each participant. I discarded any cases where participants failed to complete the spring semester. I then performed a second step-wise regression analysis. On-campus residency, SAT scores, number of credits enrolled in, academic college, ethnicity, class standing, gender, last prior institution, and fall GPA were independent variables and Spring GPA was the dependent variable.

In conclusion, the present study was designed to examine the value of on-campus residency, ethnicity, gender, domicile, SAT scores, number of credits enrolled in during the first semester, academic college, class standing, last prior institution, and previous GPA in predicting the academic achievement of entering transfer students, using first and second semester GPAs as the dependent variables. The steps described in this chapter were deemed sufficient to gather information to answer the research questions posed in the study.

CHAPTER FOUR

Results

The purpose of this chapter is to report the results of the data analysis. The chapter is organized into three sections. The first section describes a change to the original data collection procedures. The second section provides a description of the demographic and academic characteristics of the sample. The final section reports the results of the study and is arranged to answer the research questions posed in this study.

Change in Data Collection Procedures

One change was made to the data collection procedure. The original plan called for including GPA at the pre-transfer institution as one of the variables used to examine predictors of transfer student academic success. Despite several attempts, previous GPAs were not available to me, and therefore this variable was omitted from the list of independent variables.

Description of Sample

The sample in this study was comprised of all students coded in the university's student census file as entering undergraduate transfer students during the fall of 2002 at a large, public, research institution located in a mid-Atlantic state. According to the university's student census file, the total enrollment of fall 2002 transfer students was 622 students. Three of the participants were removed from the sample after the census file revealed that these students had the current institution listed as their last transfer institution. After eliminating the cases that were anomalous, the sample consisted of 619 transfer students.

Table 1 displays the demographic characteristics of the sample. For example, 57% of transfer students lived on campus, 64% were male and 75.4% were in-state residents. Table 2 displays the academic characteristics of the sample. The majority of transfer students were

Table 1

Demographic Characteristics of the Sample (N=619)

Characteristic	n	%N
On-Campus Residency		
Living on-campus	353	57.0
Living off-campus	266	43.0
Ethnicity		
White, Non-Hispanic	424	68.5
Foreign	70	11.3
Unknown	47	7.6
Asian or Pacific Islander	40	6.5
African American	21	3.4
Hispanic or Latino	16	2.6
American Indian/Alaskan Native	1	0.2
Gender		
Male	396	64.0
Female	223	36.0
Domicile		
In-State	467	75.4
Out-of-State	149	24.1
Unknown	3	0.5

Table 2

Academic Characteristics of the Sample (N=619)

Characteristic	n	%N
Academic College		
Arts and Sciences	170	27.5
Engineering	158	25.5
Business	93	15.0
Human Sciences and Education	84	13.6
Agriculture and Life Sciences	55	8.9
Architecture and Urban Studies	33	5.3
Natural Resources	25	4.0
Inter-College	1	.2
Class Standing		
Freshman	100	16.2
Sophomore	295	47.7
Junior	195	31.5
Senior	29	4.7
Last Prior Institution		
Two-Year Institution	320	51.7
Four-Year Institution	108	17.4
Unknown	191	30.9

Note. Class Standing is presented and analyzed using the university's student data base code.

enrolled in the colleges of Arts and Sciences (27.5%) and Engineering (25.5%). Most were sophomores (47.7%) or juniors (31.5%) and the majority (51.7%) transferred from two-year colleges to the four-year institution. The mean SAT score for participants was calculated using the university's record keeping system that reports scores as one-tenth of the original score. The mean score for all participants was 111.93, with a standard deviation of 16.08. On average, participants enrolled in just under 13 credits each semester during their first year at the transfer institution. Table 3 presents these data.

<div align="center">Results Reported by Research Question</div>

The first research question examined the contributions of each variable in explaining the variance in transfer students' first semester GPAs. To answer this question, I first merged the university's fall grade file with the extract of the university's student census file database created by the Office of Institutional Research and Planning Analysis.

I used step-wise regression analysis to examine the predictive value of the nine variables, with Fall GPA as the dependent variable. It should be noted that the participants transferred from at least 46 two- and four-year institutions. The student census file provided prior institution information for only in-state transfers. The regression calculated the predictive value of each of those 46 institutions. For purposes of this discussion, they are referred to simply by codes. For example, CC1 was the code for one community college while CC2 was the code for a second community college. Likewise, CU 1 was the code for one comprehensive university and CU2 the code for a second institution. Table 4 displays the results of the regression analysis. Significant predictors were SAT total scores, attending Community College (CC) #1, class standing, being Black, attending CC #2, being a student in the College of Architecture and Urban Studies, attending CC #3, attending Comprehensive University #1, and attending CC #4.

Table 3

Means and Standard Deviations of SAT Scores and Number of Credit Hours

Characteristic	Mean	Standard Deviation
SAT Score	111.93	16.08
Number of Credits	12.99	2.73

Note. SAT Score is presented and analyzed using the university's student data base code, which is one-tenth of the original SAT score.

Table 4

Results of Step-Wise Multiple Regression Predicting First Semester GPA Using On-Campus Residency, Ethnicity, Gender, Domicile, SAT Scores, Number of Credits Hours, Academic College, Class Standing, and Last Prior Institution (N=619)

Variable	*B*	*SE B*	β	*t*	*p*
Step 1 (Constant)	1.37	.338		4.06	.000
SAT Scores	.013	.003	.302	4.39	.000
Step 2 (Constant)	1.56	.333		4.68	.000
SAT Scores	.012	.003	.269	3.98	.000
CC #1	-1.03	.298	-.233	-3.44	.001
Step 3 (Constant)	1.07	.368		2.90	.004
SAT Scores	.013	.003	.287	4.31	.000
CC #1	-1.10	.294	-.249	-3.73	.000
Class Standing	.020	.007	.191	2.87	.005
Step 4 (Constant)	1.07	.362		2.97	.003
SAT Scores	.013	.003	.283	4.32	.000
CC #1	-1.12	.288	-.254	-3.88	.000
Class Standing	.022	.007	.204	3.13	.002
Black	-1.26	.448	-.182	-2.81	.005

Table 4 (continued)

Results of Step-Wise Multiple Regression Predicting First Semester GPA Using On-Campus Residency, Ethnicity, Gender, Domicile, SAT Scores, Number of Credits Hours, Academic College, Class Standing, and Last Prior Institution

Variable	*B*	*SE B*	β	*t*	*p*
Step 5 (Constant)	1.20	.359		3.34	.001
SAT Scores	.012	.003	.267	4.12	.000
CC #1	-1.14	.284	-.257	-4.00	.000
Class Standing	.020	.010	.190	2.94	.004
Black	-1.27	.441	-.183	-2.88	.005
CC #2	-1.21	.442	-.175	-2.73	.007
Step 6 (Constant)	1.10	.354		3.12	.002
SAT Scores	.012	.003	.271	4.26	.000
CC #1	-1.11	.279	-.251	-3.98	.000
Class Standing	.022	.007	.210	3.29	.001
Black	-1.24	.433	-.180	-2.88	.005
CC #2	-1.41	.440	-.204	-3.21	.002
College of Architecture & Urban Studies	.506	.178	.181	2.84	.005

Table 4 (continued)

Results of Step-Wise Multiple Regression Predicting First Semester GPA Using On-Campus Residency, Ethnicity, Gender, Domicile, SAT Scores, Number of Credits Hours, Academic College, Class Standing, and Last Prior Institution

Variable	*B*	*SE B*	β	*t*	*p*
Step 7 (Constant)	.968	.352		2.75	.007
SAT Scores	.013	.003	.295	4.66	.000
CC #1	-1.07	.275	-.242	-3.88	.000
Class Standing	.022	.007	.206	3.28	.001
Black	-1.21	.426	-.175	-2.84	.005
CC #2	-1.39	.434	-.201	-3.20	.002
College of Architecture & Urban Studies	.529	.176	.189	3.01	.003
CC #3	.609	.233	.163	2.61	.010
Step 8 (Constant)	.979	.349		2.80	.006
SAT Scores	.013	.003	.300	4.78	.000
CC #1	-1.08	.273	-.244	-3.95	.000
Class Standing	.021	.007	.197	3.16	.002
Black	-1.22	.423	-.177	-2.89	.004
CC #2	-1.42	.430	-.205	-3.29	.001
College of Architecture & Urban Studies	.547	.175	.196	3.14	.002
CC #3	.597	.231	.159	2.58	.011
Comprehensive University #1	-.467	.230	-.125	-2.03	.043

Table 4 (continued)

Results of Step-Wise Multiple Regression Predicting First Semester GPA Using On-Campus Residency, Ethnicity, Gender, Domicile, SAT Scores, Number of Credits Hours, Academic College, Class Standing, and Last Prior Institution

Variable	*B*	*SE B*	β	*t*	*p*
Step 9 (Constant)	.982	.346		2.84	.005
SAT Scores	.014	.003	.303	4.87	.000
CC #1	-1.09	.270	-.248	-4.04	.000
Class Standing	.021	.007	.197	3.18	.002
Black	-1.24	.419	-.179	-2.96	.003
CC #2	-1.43	.427	-.206	-3.34	.001
College of Architecture & Urban Studies	.531	.173	.190	3.06	.003
CC #3	.580	.229	.155	2.53	.012
Comprehensive University #1	-.484	.228	-.129	-2.12	.035
CC #4	-.502	.244	-.124	-2.06	.041

Note. R² = .09 for Step 1; Δ R² = .05 for Step 2; Δ R² = .04 for Step 3; Δ R² = .03 for Step 4; Δ R² = .03 for Step 5; Δ R² = .03 for Step 6; Δ R² = .03 for Step 7; Δ R² = .02 for Step 8; Δ R² = .02 for Step 9.

R² for Step 1 was .09, meaning that 9% of the variance in first semester GPA was predicted by variance in SAT score alone. The addition of attending CC #1 raised the R² value by .05, meaning that the SAT score and attendance at CC #1 together explain 14% of the variance in GPA. When class standing was added, the R² value was raised by .04, explaining 18% of the variance. The addition of being Black, attending CC #2, being a student in the College of Architecture and Urban Studies, attending CC #3, attending Comprehensive #1, and CC #4 raised the R² value by .03, .03, .03, .03, .02, and .02 respectively. When combined, these variables explained 34% of the variance in first semester GPA. On-campus residency, other ethnicities, gender, domicile, number of credits enrolled in, other academic colleges, and other prior institutions were excluded from the regression analysis, meaning that they added no significant explanatory value to the first semester GPA for this group.

The variables that contributed positively to first semester GPA were: (a) SAT scores, (b) class standing, (c) being a student in the College of Architecture and Urban Studies, and (d) attending CC #3. The following variables contributed negatively to first semester GPA: (a) attending CC #1, (b) being Black, (c) attending CC #2, (d) attending Comprehensive University #1, and (e) attending CC #4. With the exception of SAT scores, all significant predictor variables were binary variables.

Based on these results, the following prediction equation emerged:

First semester GPA = .982

+ (.014 x SAT Total Score)

− 1.09 if student attended CC #1

+ (.021 x class standing)

− 1.24 if Black

$-$ 1.43 if student attended CC #2

$+$ .531 if student is in College of Architecture and

Urban Studies

$+$ .58 if student attended CC #3

$-$ .484 if student attended Comprehensive University #1

$-$ .502 if student attended CC #4

The standard error of the estimate for this Step 9 equation is .35, which means 68% of all GPA

values for this group are within $+/-$ .35 from the value of this equation. Readers should note that

the SAT scores used in this study are university central code values that are actually one tenth of

the absolute SAT score. For example, an SAT score of 1200 would be coded as 120 in the

university's central system. Class standing is also represented by university central code values.

Freshmen, sophomore, junior, and senior class standing are coded as 10, 20, 30, and 40,

respectively.

The second research question examined the contributions of each variable in explaining

the variance in transfer students' second semester GPAs. First semester GPA was included as a

tenth independent variable. To answer my research question, I first merged the university's

spring grade file with the extract of the university's student census file database. Fifty-seven of

the participants in the census file did not receive spring grades. Upon closer examination, I found

that 8 of the 57 were enrolled only in a Pass/Fail field study course or another non-graded course,

one received an Incomplete, and the rest appeared not to have enrolled in the spring semester at

all. These cases were excluded from the second regression analysis, rendering a sample size of

562.

I used step-wise regression analysis to examine the predictive value of the 10 variables,

with Spring GPA as the dependent variable. Table 5 displays the results of the regression

analysis. The only significant predictor was first semester GPA, which contributed positively

to second semester GPA. R^2 was .39, meaning that 39% of the variance in second semester GPA

was predicted by variance in first semester GPA alone. All other independent variables were

excluded from the regression analysis, meaning that they added no significant explanatory value

to the second semester GPA for this group.

Based on these results, the following prediction equation emerged:

Second semester GPA = .558 + (.772 x first semester GPA)

The standard error of the estimate for this Step 1 equation is .21, which means 68% of all GPA

values for this group are within +/- .21 from the value of this equation. These findings and their

implications are discussed in the final chapter of this study.

Table 5

Results of Step-Wise Multiple Regression Predicting Second Semester GPA Using On-Campus

Residency, Ethnicity, Gender, Domicile, SAT Scores, Number of Credits Hours, Academic

College, Class Standing, Last Prior Institution, and Fall GPA (N=562)

Variable	*B*	*SE B*	β	*t*	*p*
(Constant)	.558	.205		2.72	.007
Fall GPA	.772	.070	.628	11.02	.000

Note. R² = .39

CHAPTER FIVE

Discussion

This study examined the value of the following factors in predicting the academic success of undergraduate transfer students in their first and second semesters of enrollment: (a) on-campus residency, (b) ethnicity, (c) gender, (d) domicile, (e) SAT scores, (f) number of credits enrolled in during the first semester, (g) academic college, (h) class standing, and (i) last prior institution. In addition, when examining predictive variables for second semester, first semester GPA was included as an independent variable. The participants' first and second semester GPAs were used as the dependent variables. I analyzed the data using step-wise regression to determine any statistically significant predictive value of the above variables in transfer student academic success.

This chapter describes the results of the study in four sections. The first section discusses the findings of the study reported by the research questions. The next section compares the results of this study to findings from previous research. The third section discusses implications of the findings for future practice, research, and policy. Finally, some conclusions are drawn.

Discussion

The first research question examined the contributions of each variable in explaining the variance in transfer students' first semester GPAs. To explore this question, I used step-wise regression analysis to examine the predictive value of all the variables, with Fall GPA as the dependent variable. Significant predictors were SAT scores, attending CC #1, class standing, being Black, attending CC #2, being a student in the College of Architecture and Urban Studies, attending CC #3, attending Comprehensive University #1, and attending CC #4. On-campus

residency, other ethnicities, gender, domicile, number of credits enrolled in, other academic colleges, and other prior institutions were not significant predictors of first semester GPA.

Of the significant predictors, four contributed positively to first semester GPA: (a) SAT scores, (b) class standing, (c) being a student in the College of Architecture and Urban Studies, and (d) attending CC #3. There are several possible reasons why these variables are positive influences. SAT score, which was the strongest predictor of first semester GPA in this study, could have been a positive influence due to several factors. First, while some literature suggests caution when interpreting SAT scores and other college entrance examinations, many colleges still require SAT as part of the admissions process, suggesting that these scores are related to the potential for academic success. Second, the sample used in this study could have influenced the predictive value of SAT scores. The research on college entrance examinations indicates that standardized measures are more appropriate predictor variables for different student groups. For example, studies conducted by Morgan, Paszczyk, and Phillippi (as cited in Carlan & Byxbe, 2000) indicate that college entrance examinations are significant predictors during the early college years, but not for junior and senior performance. The majority of transfer students in this study were freshmen or sophomores (63.9%). SAT scores also appear to not be as strong a predictor for Black students' GPAs as they are for White students' GPAs (Nettles, Thoeny, & Gosman, 1986). More than half (68.5%) of the students in the sample were White and a very small percentage (3.4%) were Black. These characteristics of the sample may help explain why SAT was the most significant factor in this study.

Another variable that positively contributed to first semester GPA was class standing. The longer a student in this study waited to transfer to the institution, the greater the GPA. It is possible that class standing is a positive influence because upper-level students may be more

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mature as they have had more collegiate and life experiences. Upper-level students might be more comfortable in a college setting, contributing to a more positive transition than that of freshmen or sophomores. Having spent more time in college, these students also might have developed a wider variety of effective skills in areas such as studying, test taking, and coping, thereby increasing their opportunities for academic success.

Being a student in the College of Architecture and Urban Studies also positively impacted first semester GPA. Participation in this particular college could be a positive influence for a few reasons. First, there could be greater student-faculty collaboration in the college, which could reduce the amount of transfer shock. Second, the faculty and academic advisors in the College of Architecture and Urban Studies might focus more on assisting transfer students with their transition to the institution. Finally, it is possible that the admissions process for the college is more selective than some of the other colleges, thereby admitting transfer students who have already demonstrated greater academic success than some of the other transfer students.

The final variable that positively contributes to first semester GPA was attending CC #3. It is possible that attending this CC was a positive influence for several reasons. When compared to the other prior institutions in the sample, perhaps CC #3 had a curriculum and grading system that more closely matched that of the transfer institution, therefore students who attended CC #3 may have been better prepared to meet the norms of the transfer institution. It is also possible that CC #3 has a more strategic and effective articulation agreement in place with the transfer institution than some of the other prior institutions in the study, resulting in an easier transition for transfer students.

Five significant predictors contributed negatively to first semester GPA: (a) attending CC #1, (b) being Black, (c) attending CC #2, (d) attending Comprehensive University #1, and (e)

attending CC #4. There are several possible reasons why these variables are negative influences. For example, attending CC #1, CC #2, Comprehensive University #1, and CC #4 could have been negative influences if the curricula at these institutions were less rigorous than the curriculum at the transfer institution. Another possible explanation could be that GPAs at these institutions are inflated, thereby allowing potentially less qualified students to be admitted into the transfer institution. In addition, it could be that these institutions have ineffective articulation agreements with the transfer institution. Finally, with regard to students who attended the CCs, perhaps the transition from a two-year to a four-year institution was an enormous shock for these transfer students and therefore had a negative influence on their first semester GPAs.

The final variable that contributed negatively to first semester GPA was being Black. It is possible that the nature of the transfer institution may have had a significantly negative effect on the academic performance of the Black transfer students in this study. In 2002, when the participants enrolled in the transfer institution, a little more than 1,000 of the approximately 21,000 undergraduates were Black. Almost 17,000 of the undergraduates were White. Perhaps the culture of the institution in this study caused some transfer shock for the Black participants, thereby affecting their first semester GPAs.

These findings are interesting for several reasons. To start, they suggest that academic characteristics play more of a role than demographic characteristics in predicting first semester GPA for transfer students. Of the nine significant variables, only one (being Black) addressed demographic information. These findings suggest that other demographic characteristics are not important in terms of predicting first semester GPA.

Results also demonstrate the impact these particular variables may have on a transfer student's first semester GPA. For example, consider two different hypothetical cases. Since SAT

score was found to be the most predictive variable for first semester GPA, each case will use the same SAT score, which will be the mean score of 111.93. First, there is Jane, a sophomore who transferred from CC #3. Jane is White. The prediction equation for Jane's first semester GPA would be:

First semester GPA = .982

+ (.014 x 111.93) -- SAT score

+ (.021 x 20) -- class standing

+ .580 -- CC #3

Using this equation, Jane's first semester GPA value equals 3.55. With the standard error of the estimate for this equation being .35, there is a 68% chance that Jane's first semester GPA will be within +/- .35 from the value of this equation. Jane's predicted GPA range is therefore 3.20 to 3.90.

Next, consider Joe, also a sophomore, but one who transferred from Comprehensive University #1. Joe is Black. The prediction equation for Joe's first semester GPA would be:

First semester GPA = .982

+ (.014 x 111.93) -- SAT score

+ (.021 x 20) -- class standing

- 1.24 -- Black

- .484 -- CU #1

Using this equation, Joe's first semester GPA value would equal 1.25. With the standard error of the estimate for this equation being .35, there is a 68% chance that Joe's first semester GPA will be within +/- .35 from the value of this equation. Joe's predicted GPA range is therefore .90 to 1.60.

Jane and Joe were both sophomores and had the same SAT score. Regardless, they had dramatically different predicted GPA ranges. The fact that Jane was White and attended CC #3, both of which contributed positively in this study, and that Joe was Black and attended Comprehensive University #1, both of which were negative influences in this study, made an impact on their first semester GPAs at this transfer institution. While about one-third of all transfer students will not fit within this particular equation, it is important to realize what a great impact institution and race are likely to have in the academic success of transfer students at this institution.

My second research question examined the contributions of each variable in explaining the variance in transfer students' second semester GPAs. To explore this question, I used step-wise regression analysis to examine the predictive value of all the variables, with Spring GPA as the dependent variable. I also included first semester GPA as an independent variable in the analysis. The only significant predictor was first semester GPA. On-campus residency, ethnicity, gender, domicile, SAT scores, number of credits enrolled in, academic college, class standing, and prior institution were not significant predictors of second semester GPA.

This finding is interesting for several reasons. First, since first semester GPA is predictive of second semester GPA, then those variables that affected first semester GPA also indirectly affect second semester GPA. It is therefore important to realize that these variables, although indirect, can have relatively long-term effects on transfer student academic success. That is, the first semester predictor variables help set a student up for academic success or failure. That tracking then carries over generally to second semester. In addition, while the previous predictors of first semester GPA appear to be no longer significant once the predictive value of first

semester GPA has entered the regression equation, it could be that first semester GPA serves as a proxy for the continued influence of those variables.

These results suggest some important insights into the contributions of each variable in explaining the variance in transfer students' first and second semester GPAs. The importance of these findings become more evident when compared to previous research on the topic.

<center>Relationship of the Findings to Prior Research</center>

The breadth of research on predictor variables of transfer student academic success has yielded a body of mixed results. Therefore, the results of this study corroborate some and contradict other previous studies.

Some of the findings in this study support previous studies in certain instances. For example, Minear (1998) found SAT scores to be a significant factor in predicting transfer student academic success. This study not only found SAT to be a significant predictor, but found it to be the most significant predictor.

Other studies of transfer student academic success have found class standing to be a significant predictor variable (Best & Gehring, 1983; Carlan, 2001; Walker, 1996). Specifically, these studies have found that students who transfer later, like as juniors, do better. The findings in this study support this research. The longer a student waited to transfer, the higher the first semester GPA.

Studies have also examined ethnicity as a predictor of transfer student academic success. The literature overall suggests that Black transfer students earn significantly lower GPAs than White students. My study supports these findings. Being Black was found to contribute negatively to first semester GPA, potentially decreasing a student's GPA slightly more than one grade point.

<center>50</center>

Finally, prior studies also highlight variables that appear to be nonsignificant in relation to transfer student academic success. For example, Carlan and Byxbe (2000) found number of credits enrolled in to be not significant. Some scholars have also suggested that gender (Carlan & Byxbe, 2000; Graham & Hughes, 1994; Holton, 1991) is not a significant predictor of transfer student academic success. The present study supports these findings. Neither number of credits enrolled in nor gender added significant explanatory value to the first semester GPA.

There were also findings that contradict previous studies. For example, much of the research on transfer student academic success suggests that community college attendance has at least initially a negative influence on a transfer student GPA (Cejda, 1994; Diaz, 1992; Holahan et al., 1983; Holahan & Kelley, 1978; Jacobs et al., 1992; Rhine et al., 2000; Townsend, 1995). Furthermore, of the studies that directly compare the relationship between academic success and transferring from a two-year versus another four-year institution, community college transfer students appear to be less prepared for the transition to a four-year institution (Holahan et al., 1983; Holahan & Kelley, 1978). My findings contradict these results. In this study, prior attendance at a two-year v. four-year institution was not significant. While there were three two-year institutions that negatively contributed to transfer student first semester GPA, there were at least 18 other two-year institutions that did not significantly impact GPA in any direction. One two-year institution, in fact, actually had a positive influence on GPA. Furthermore, one four-year institution contributed negatively to GPA.

Other studies on predictor variables of transfer student academic success suggest that on-campus residency is a significant factor. The literature reveals that students who live off-campus typically perform significantly better academically than those students who live on-campus (Graham & Hughes, 1994; Holton, 1991; Walker, 1992). The present study, on the other hand,

suggests that on-campus residency is not a significant variable in predicting transfer student GPA.

Gender has also been cited in some of the literature as a significant predictor of transfer student academic success. In all cases, female transfer students earn higher GPAs than males (Al-Sunbul, 1987; Carlan, 2001; Durio et al., 1982; Holahan et al., 1983; Minear, 1998; Walker, 1992). My findings do not support this prior research. Gender was not a significant variable in this study.

Number of credits enrolled in has also been examined as a predictor variable of transfer student academic success. Holton (1991) reported number of credits as a significant predictor of academic success, suggesting that transfer students attempting 12 credit hours or fewer were significantly more likely to earn higher GPAs. The present findings, however, suggest that number of credits is not a significant predictor of transfer student academic success.

My findings also contradict other studies. Some scholars report that there is no significant relationship between ethnicity and academic success (Graham & Hughes, 1994; Minear, 1998). My findings suggest that ethnicity can play a significant role, at least for Black transfer students. Other scholars have claimed that there is no significance between class standing and transfer student academic success (Al-Sunbul, 1987; Carlan & Byxbe, 2000; Holton, 1991). The present study, on the other hand, found class standing to be a significant variable that contributes positively to first semester GPA. Finally, some research indicates that academic college is an insignificant variable when examining transfer student academic success (Holton, 1991). In this study, however, there was an academic college found to be a significant predictor variable of first semester GPA.

Implications for Future Practice, Research, and Policy

This study had significance for future practice, research, and policy. In terms of practice, many university constituencies may be interested in the study. First, the findings have several implications for college admissions counselors. The study provided them with data about variables that positively and negatively contribute to academic success of transfer students. Increased awareness of the best predictors of first year success of transfer students may provide clearer insight and direction in the admissions process. For example, the findings suggest that SAT score is the strongest positive predictor of first semester GPA. Based on these findings, college admissions counselors may feel more confident in continuing to use the SAT as an evaluative measure in their admission criteria. The findings also suggest that attending certain schools can either positively or negatively influence transfer student academic success. Admissions counselors may heighten recruitment efforts at the institutions that were positive influences and may be more cautious when admitting students who attended institutions that were found to negatively influence first semester GPA.

The data from the study may also benefit those administrators who work in multicultural affairs. Although the data should be interpreted carefully due to the small number of Black participants in the study, being Black contributed negatively to first semester GPA. Thus academic support programs targeted at racial minorities who transfer, particularly Black transfer students, by multicultural affairs administrators may be helpful.

Administrators at the pre-transfer institutions may also benefit from the findings. The study provided them with information on predictor variables of academic success among transfer students. Knowing that class standing has a positive influence on first semester GPA, administrators at the pre-transfer institution may encourage students to wait longer before

transferring to another institution. In addition, the study provided administrators of certain pre-transfer institutions with information on how well or poorly they are preparing their transfer students. Administrators at institutions found to negatively influence first semester GPA might wish to reevaluate their curricula, grading systems, articulation agreements, and efforts in preparing students to transfer to another institution.

This study also had significance for future research. I examined select factors in relation to GPA, including on-campus residency, ethnicity, gender, domicile, SAT scores, number of credits enrolled in during the first semester, academic college, class standing, and last prior institution. Future studies may explore different predictor variables of academic success such as GPA at the pre-transfer institution, age, and participation in transfer orientation programs. Such a study would expand the knowledge base about predictor variables of transfer student academic success in general.

The present study was conducted at a predominately White institution. Future research could study predictors of academic success among a more ethnically diverse student body. Such a study would provide a more representative picture of ethnicity as a predictor variable of transfer student academic success.

Finally, this study omitted students who did not have spring grades from the data analysis. Future studies may explore the experiences of transfer students who do not re-enroll the following semester after transfer. Such a study would provide a more in-depth examination of transfer student academic success.

This study also had significance for policy. The findings of this study revealed significant predictors of transfer student academic success. Those who manage admissions decisions might want to examine policies related to transfer admissions. The findings of this study suggest that

focusing on factors such as SAT scores, class standing, and pre-transfer institution can better determine which transfers are more likely to succeed at the institution. Policymakers may want to review their policies to see if they reflect these findings.

This study also suggests that certain institutions may more adequately prepare their students to transfer to a four-year institution. Those responsible for creating articulation agreements between community colleges and transfer institutions may therefore benefit from the study. Policymakers might use these findings to assess whether their articulation policies are efficient and effective.

Finally, the present findings indicate that Black transfer students do not perform as well academically as other student groups. Those who manage diversity efforts might want to examine policies related to minority students to see what efforts can be made to facilitate a smoother transition for these transfer students.

Limitations

As with all research, the present study had limitations. One limitation of the study related to the data collection. GPAs at the pre-transfer institution were not available to me, and therefore this variable was omitted from the list of independent variables. Among all the research on transfer student academic success, previous GPA is the most consistent and recurring predictor variable. If previous GPA was included as an independent variable in my analysis, my results might have been different.

Another possible limitation related to the data source. When recoding the data, I only knew whether students transferred from a two-year or four-year institution for in-state schools. The extract of the university student census file only provided prior institution information for

those colleges and universities in the same state as the transfer institution. All out-of-state schools were coded as ERROR. If all the prior institutions were known, my results might have been different.

An additional limitation related to the sample. Fifty seven of the participants in the census file did not receive spring grades and were therefore omitted from the analysis, reducing my sample size. In addition, it is not known why some of these students appear not to have enrolled in the spring. These students could in someway have differed from the rest of the sample. If this was the case, my results could be skewed.

A final limitation also had to do with the sample. There was a high percentage of White, Non-Hispanic participants in my sample and few minorities. The results of this study as they pertain to transfer students who are not White should be viewed with caution.

Conclusion

Despite these limitations, the study attempted to expand the understanding of predictor variables of transfer student academic success. When enrolling and working with transfer students, college administrators have access to this type of information but rarely use it to their full advantage. The present study suggests that there are variables that are significant predictors of academic success, which can contribute both positively and negatively to a transfer student's first and second semester GPA.

Increasing the academic success and retention of transfer students continues to be a challenge for those in higher education. This study offered valuable information to educators about transfer students. With this information, college administrators can better meet the needs of this student population. Providing the appropriate support may help the transition of transfer

students, thereby retaining these students, which, in turn, helps the institution stabilize its enrollment.