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ABSTRACT
                The purpose of this study was to determine the extent to
which sociodemographic, language acquisition, college experience, and
placement test variables can predict the academic success of immigrant
students at a large public university system in the United States. Immigrants
were defined as "foreign-born" people, regardless of citizenship or legal
residence status, and the focus was on immigrants whose native language was
not English. The dependent variable was the students' college grade point
average (GPA). Analyses were based on 1,854 immigrant students whose native
language was not English and who had completed at least 24 credit hours. With
the exception of gender during the second semester, sociodemographic
variables showed no statistically significant relationship with academic
success. Findings indicate that immigrants who lived in the United States for
10 years or longer tended to have lower GPAs than students who emigrated more
recently. This suggests that emigrating to the United States may have
interrupted the native language acquisition of these students, which in turn
can inhibit second language acquisition and constrain academic achievement.
Academic major was an indicator of academic achievement for this population,
with students who were undecided on a major having lower GPAs. Total credits
completed did have a positive association with academic success. Placement
tests measuring academic English proficiency added little value in predicting
academic success for these students. Some implications for college admissions
for immigrants are discussed. (Contains 6 tables and 56 references.) (SLD)

Immigrants in US Colleges:
What Contributes to Their Academic Success

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Immigrants in US Colleges:
What Contributes to Their Academic Success

Introduction

Although K-12 educational systems have traditionally been affected most by influxes of immigrants, an increasing number of first generation immigrants are entering US institutions of higher learning (Gray, 1996; Mogelonsky, 1997; Olneck, 1995). Immigrants comprise 8 percent of the 18-21 year-old population and more than 10 percent of the 22-24 year-old population (Vernez & Abrahamse, 1996). Immigrant students are attending colleges and universities at a rate higher than the general population. In 1990, 65 percent of immigrants between ages 18 and 21 were enrolled in post-secondary education. The comparable percentage for all 18-21 year-olds was 57 percent. Asian, Black, and White immigrants enroll in college at higher rates than US-born Asians, Blacks, and Whites, and the college-going rate of Hispanic immigrants is only slightly less than the college-going rate of US-born Hispanics (Vernez & Abrahamse, 1996).

In comparison to those who emigrated to the US between 1960 and the early 1980s, these immigrants are more ethnically, linguistically, educationally, and socio-economically diverse. They are younger and poorer and usually have lower educational levels in their native countries (Mogelonsky, 1997; Vernez & Abrahamse, 1996). The majority come from economically deprived and politically unstable countries, such as Vietnam, Cambodia, Mexico, and some Central American nations (Bureau of the Census, 1993; Dunlap, 1993; Vernez & Abrahamse, 1996). Furthermore, these new arrivals have entered the US as the demand for unskilled labor has diminished, and the demand for a

1

highly skilled and well-educated workforce has increased (Dionne & Kean, 1997; Sorenson et al., 1995).

The needs of immigrant students parallel in some ways the academic and social needs of higher education's other underrepresented groups (Pemberton, 1988; Terenzini et al., 1994; Zamel, 1995). Yet English language proficiency is a key difference between underrepresented minorities and new immigrants (Gonzalez, 1992; Narvaez & Garcia, 1992; Schick & Bothe, 1995; Young, 1995), and many in higher education agree that this limitation is a serious barrier to English as a Second Language (ESL) immigrants' academic success.

US colleges, already struggling to teach under-prepared native students, face the task of educating an increasing number of immigrants who are not fluent in English. Political leaders are questioning the cost of remedial education for both immigrants and native students (Arenson, 1998; Gregory, 1997; Hodgkinson, 1996). Demographic and political pressures are forcing higher education administrators to reconsider how they meet the needs of immigrant students, particularly in institutions with open enrollment policies.

Critics have conflicting views on how the increased number of new immigrants will affect institutions of higher education. Gray (1996) claimed that the biggest hurdle for colleges is in determining how to support, both academically and socially, the growing immigrant college population. Olivas (1992) proposed that legal issues will plague colleges as these institutions try to ascertain the complexity of the law in the areas of admissions and residency requirements for this population. Vernez (1996) argued that education is the largest expense in state budgets, and the increase in immigration creates

a particular fiscal burden for the five states where most of them live. Olneck (1995) suggested that research that focuses on the educational needs of this diverse group of immigrants will help elucidate the social issues surrounding them and provide further guidance to political and educational leaders in how best to educate new immigrants.

Study Purpose

Most research related to immigrant education focuses on K-12 students or English language acquisition. Factors associated with immigrant college student success are not understood well. Those studies that have focused on immigrant college students utilized small samples, studied a limited number of independent variables, and employed few control variables (Bers, 1994; Bosher & Rowekamp, 1998; Patkowski, 1990). The central purpose of this study was to determine the extent to which socio-demographic, language acquisition, college experience, and placement test variables can predict the academic success of immigrant students at one of the largest public university systems in the US. For this research, immigrants are defined as foreign-born people, categorized as citizens, legal aliens, refugees, asylees, and amnesty aliens. The focus was on immigrants whose native language is not English.

Conceptual Framework and Study Variables

We examined four sets of independent variables: socio-demographic, language acquisition, college experiences, and placement tests. Inclusion of **socio-demographic** variables is suggested by theories of college student development (Astin, 1993; Hurtado & Carter Faye, 1994; Terenzini et al., 1994; Tinto, 1987), which suggest that gender,

ethnicity, parental education, parental occupation, and family income may affect educational aspirations and outcomes. The effects of these variables on immigrant college student achievement remain largely unexplored.

Inclusion of **language acquisition** variables is suggested by theories of language proficiency drawn from research in psychology, sociolinguistics, sociology, and ethnography (Byrnes & Canale, 1987; Cummins, 1981; Gray, 1996; Shaw, 1992). Specifically, we examine length of residence in the US and high school type. Researchers have found significant, positive associations between length of residence and language proficiency scores on standardized tests (Duran & Weffer, 1992; Oller & Hinofotis, 1980). Gray (1996) found, however, that immigrant students who have attended both middle and high school in the US often exhibit limited language proficiency in both their primary language and English. Bosher and Rowekamp (1998) found that immigrant students with foreign high school credentials scored higher on standardized tests of English proficiency and that years of study in US schools correlated negatively with college GPA. Connections between first (L1) and second (L2) language competency are supported by Cummins's (1979) theory of language acquisition, which states that the level of competence attained in L2 is a function of the level of competence developed in L1 at the time when intensive exposure to L2 begins.

College experience variables include credits completed and academic major. Course loads among ESL immigrant students tend to vary widely, with some ESL students enrolling in only one credit-bearing course per semester (Heil & Aleamoni, 1974). Thus, ESL students' GPAs are based on loads ranging from one course to "full" loads. Hence, there is a need to control for credits completed. Similarly, grading

4

practices vary across academic programs. Hence, there is a need to control for academic major.

Placement tests in reading, writing, and mathematics are used to classify incoming students for remedial education. Some institutions have begun to use these tests for purposes of admission. For example, in 1995, the Board of Trustees of the City University of New York called for senior colleges to admit students to baccalaureate programs "only if the remedial and ESL instruction they are evaluated as needing can be accomplished within two semesters" (City University of New York, Office of Institutional Research and Analysis, 1998, p. 1).

The limited research on immigrant college students suggests that scores on standardized tests of English proficiency do not yield correlation with college GPA and are thus an unsatisfactory criterion for predicting academic achievement (Bosher & Rowekamp, 1998; Patkowski et al., 1997). Other studies, on the contrary, have found some statistically significant relationships between scores on objective language tests and international students' GPA (Heil and Aleamoni, 1974; Ho & Spinks, 1985). It is important to note that a higher correlation is exhibited when graduate students are the subjects of study.

The dependent variable for this study was college grade point average (GPA). We chose to examine GPA during the critical first year of enrollment. We also examined GPA at the end of the second year of enrollment, when GPAs would reflect performance on a larger number of courses. We examined the dependent variable at three points in time: GPA for credit-bearing courses completed in Fall 1990 (semester 1), GPA for credit-bearing courses completed in Spring 1991 (semester 2), and cumulative GPA for

credit-bearing courses completed through Spring 1992 (year 2). For year 2, we limited our analysis to consider only those students who had completed at least 24 credits by the end of their second year of enrollment.

Limitations

High school GPA, parental occupation, and family income were removed from the analysis due to large amounts of missing data. Nearly two-thirds of the population was missing data on at least one of these three variables. "Welfare status" was used in place of family income. Variable definitions and data sources are identified in Table 1.

INSERT TABLE 1

Method

Data Source

This study utilized data collected by the institutional research office of the university system. Data sources include the freshman application form, the university's student questionnaire, and placement test results. The cohort includes students who entered the university in the Fall 1990 semester.

The selected cohort included 26,728 students. The total number of first-year students who completed the student questionnaire was 8332. Among the enrolled, first-year students who responded to the questionnaire, 1854 were ESL immigrants. Analyses are based on data from 1854 students who indicated on the freshman application that they were not born in the US and that their native language was not English.

6

The dependent variable (GPA) was examined at three points in time: first semester, second semester, and cumulative at the end of year two. To be included in the semester analyses, students must have completed at least one credit-bearing course in the appropriate semester. To be included in the cumulative year two analysis, students must have completed 24 credits. This resulted in a final sample size of 1656 for semester one, 1521 for semester two, and 1050 for year two.

Procedures

We utilized a modified version of the "input-environment-outcome" (I-E-O) research model employed by Astin (1991) and Sax (2001) in studies of college student outcomes. This model enables researchers to examine effects of environmental variables on college student outcomes, after controlling for differences in input characteristics.

The I-E-O model suggests a blockwise multiple regression strategy, where, in this case, socio-demographic variables are entered into a regression equation first, followed by language acquisition and college experience variables. The placement test variables were entered last in order to determine their unique predictive effect on GPA, after controlling for input characteristics, credits completed, and academic major. An alpha of .01 was used for all tests of statistical significance.

Results

Student Characteristics

Student characteristics are summarized in Table 2. This study examined the GPAs of a cohort of immigrant students at three points in time. Due to attrition, the

7

characteristics of the sample vary slightly across the three points of measurement. The proportion of Spanish speakers (39.5% to 31.9%) and GED graduates (14.1% to 10.9%) declined over time.

INSERT TABLE 2

Grade point averages, credits earned, and placement test scores are summarized in Table 3. By their second semester, immigrant students were completing more credits (6.88 vs. 9.24), and earning slightly lower GPAs (2.82 vs. 2.62).

The maximum possible score for the math placement test is 40, and the minimum "passing" score is 25. The maximum possible score for the writing placement test is 12, and the minimum "passing" score is 8. The maximum possible score for the reading placement test is 25, and the minimum "passing" score is 13. With the exception of the math placement test, immigrant students were well below the minimum passing scores.

INSERT TABLE 3

Regression Analysis: Fall 1990

The full set of independent variables accounted for 13.6 percent of the variation in Fall 1990 GPA. None of the socio-demographic variables significantly predicted GPA. Length of residence in US was no longer statistically significant after controlling for placement test scores. US high school credentials were negatively associated with GPA. Students who were undecided about their major had lower GPAs than math majors. Math placement test scores were positively associated with GPA; however, the placement

8

tests uniquely accounted for only 1.4% of the variation in GPA after controlling for socio-demographic, language acquisition, and college experience variables. Results are summarized in Table 4.

INSERT TABLE 4

Regression Analysis: Spring 1991

The full set of independent variables accounted for 19.6% of the variation in Spring 1991 GPA. Controlling for the other independent variables, male students had significantly lower GPAs than female students. Length of residence and US high school credentials were negatively associated with GPA. Math and reading test scores were positively associated with GPA; however, the placement tests uniquely accounted for only 2.1 percent of the variation in GPA after controlling for socio-demographic, language acquisition, and college experience variables. Results are summarized in Table 5.

INSERT TABLE 5

Regression Analysis: Spring 1992

The additional requirement for selecting this sample was that students must have completed at least 24 credit hours. The full set of independent variables accounted for 35.7% of the variation in cumulative year two GPA. Length of residence and US high school credentials were negatively associated with GPA. Controlling for the other independent variables, students in non-math dominant majors had significantly higher

9

GPAs than students in math-dominant majors. Math placement test scores were positively associated with GPA; however, the placement tests uniquely accounted for only 2.3 percent of the variation in GPA after controlling for socio-demographic, language acquisition, and college experience variables. Results are summarized in Table 6.

INSERT TABLE 6

Discussion

The validity of GPA as a measure of academic achievement is enhanced as the number of courses involved in its calculation increases. Conversely, GPA may be a less accurate indicator of academic achievement when it is based on only a few courses. The set of independent variables in this study was more successful in predicting GPA as the number of courses increased. Previous studies of immigrant students, which have examined only one or two semesters of academic work (Bers, 1994; Bosher & Rowekamp, 1998; Patkowski, 1990), may underestimate the effects of independent variables on college grades.

Socio-demographic Variables

With the exception of gender during the second semester, socio-demographic variables showed no statistically significant relationship with academic success. The limited explanatory power of socio-demographic variables in this study is consistent with findings of other studies of ESL immigrant college students. Bers (1994), for example, found no GPA differences by gender or ethnicity among immigrant college students.

Duran's (1983) study on immigrant Hispanic students indicated that females under-performed males before and during high school. But Vernez's (1996) findings showed that, with the exception of immigrant Hispanics, gender was not associated with college attainment.

Language acquisition factors

There is abundant research on the relationship between language acquisition/English proficiency and academic success (Collier, 1989; Cummins, 1981; Graham, 1987). The previous research has indicated that many factors are involved in what determines language acquisition and thus English proficiency. This study examined length of residence and high school type as factors related to language acquisition.

Study findings indicated that immigrant students who have lived in the US for 10 years or longer tended to have lower GPAs than students who emigrated more recently. Moreover, students who attended US high schools tended to have lower GPAs than students who graduated from high school in their native countries. The results of this study suggest that emigrating to the US may have interrupted students' native language acquisition, which in turn can inhibit second language acquisition and constrain academic achievement (Cummins, 1981). The findings of this study are consistent with Bosher and Rowekamp's (1998) study of 57 refugee/immigrant students enrolled at the University of Minnesota in which length of residence in US correlated negatively with GPA, and immigrant students with foreign high school credentials scored higher than US high school graduates on a standardized English proficiency test.

<u>College Experiences</u>

Research suggests that grade point averages vary by academic major (Duran &
Weffer, 1992; Johnson, 1988; Light, Xu, & Mossop, 1987; Rodriguez, 1996; Sue & Abe,
1988). In her study of predictors of academic success for Mexican American and White
college students, Rodriguez (1996) found that for Whites, pre-college predictors, such as
high school rank and high school grades, were better predictors of academic success.
However, for Mexican Americans, academic major was a better predictor of academic
success.

For ESL international students, academic major has also been a factor in
predicting academic success. Researchers (Johnson, 1988; Light et al., 1987)
investigating the relationships among English proficiency as measured by TOEFL,
academic major, and academic success (GPA) have indicated significant differences
among academic majors. Results showed that business majors scored higher on the
TOEFL but had notably lower GPAs.

This research showed that academic major was an indicator of academic
achievement for this ESL immigrant population. Students who were undecided on a
major had significantly lower first semester GPAs. For students choosing non-math
dominant majors, the study showed a positive association with cumulative end-of-second
year GPA.

For college students, the number of credits completed is also considered a
criterion for academic success. Johnson (1988) and Light (1987) examined the
relationship between English proficiency, number of credits earned, and academic
success (GPA). Results of both studies suggest that there was significant correlation

14

between credits earned and language proficiency. In addition, the results indicated that the higher the TOEFL scores, the higher the number of credit hours earned by the student.

The results of this study indicate that total credits completed had a positive association with academic success. Findings also suggest that credits completed was the strongest predictor of academic achievement for this population. Most significantly, it suggests the importance of ESL immigrant students being enrolled in credit bearing courses.

Placement Test Scores

In the last thirty years there has been considerable debate on the validity of traditional measures of academic performance to evaluate the potentiality of minority students' succeeding in college (Briland, 1979). Specifically, the argument centers on using high school GPA and standardized tests as predictors of college success. This debate engendered a plethora of research on predictors of academic success for the ESL college student who at that time was mostly an international population. The most common criterion studied for the international ESL population was English language proficiency measured by TOEFL (Graham, 1987).

The increasing number of immigrant residents and their increasing representation on college campuses forces us to continue the debate on the validity of using traditional predictors of success for non-traditional populations. This research used the university system's standardized entrance examination tests as criteria for measuring academic preparedness for academic work. The math placement test is used to measure

quantitative proficiency. Writing and reading placement tests are used as measures of verbal proficiency and therefore academic English proficiency.

The available prediction studies reveal the difficulties in defining what second language skills speakers of other languages need to succeed in college. As reported by Graham (1987), some researchers (Mulligan, 1966, Sugimato, 1966, Hwang and Dizney, 1970, Sharon, 1972, Shay, 1975, and Gue and Holdaway, 1973) have concluded that the relationship between English proficiency and academic success is insignificant. But Burgess (1970) and others (Freidenburg & Curry, 1981; Heil & Aleamoni, 1974) have found that English proficiency does predict academic success. It is important to note that these studies focus on international, rather than immigrant, students. The limited research makes it difficult to generalize about levels of academic English proficiency immigrant students need to succeed in college.

Bosher and Rowekamp (1998) found a positive relationship between immigrant students' grades and scores on the Michigan English Language Assessment Battery (MELAB). However, Patkowski (1990) found only weak correlations between the City University of New York's English proficiency tests and the academic success of ESL immigrant students.

The findings of this research are similar to Patkowski's. The reading and writing placement tests had minimal predictive power beyond that contributed by the other variables studied. These results indicate that placement tests measuring academic English proficiency add very little value in predicting academic success for immigrant ESL college students.

Research on college students' academic development suggests the importance of using a range of academic aptitudes, including math proficiency, to predict academic success. Studies using ESL international students as the unit of analysis (Sharon, 1972; Sokari, 1981; Strohl, 1994; Wilcox, 1975) showed evidence that math aptitude scores have significant correlation with college GPA. Patkowski (1990) examined this variable among the immigrant student population. The results of his study indicated that there was a positive relationship between math placement test scores and subsequent academic success. Similar results were found in this study.

Discussion

Traditional predictors of college success – socio-economic characteristics and placement test scores – may not be appropriate for the ESL immigrant population. For example, language acquisition variables (length of residence and high school type) appeared to influence academic success more than socio-economic status and standardized entrance examinations. Indicators such as gender, ethnicity, and parental education that have been found to influence academic success in the native population do not seem to be contributing factors among this ESL population. The study indicates that a combination of language acquisition variables and college experience variables provides a more accurate prediction of an immigrant ESL student's college grade performance. Because of these different predictors, ESL immigrant students' access to higher education opportunities may be at risk if colleges and universities rely entirely on socio-demographic data and standardized test scores in admissions decisions.

Policy Implications and Recommendations

This study reveals two directions for policy. If academic placement tests are used as criteria for baccalaureate admission, ESL immigrant students may be kept out of certain post-secondary venues. These students may, instead, attend community colleges, and research shows that many of these students will not continue their education in a four-year institution. The danger may be in creating "ghetto-like" academic communities where immigrant students will be delegated to lower level jobs due to their lower levels of educational attainment.

For academic institutions, it is imperative to clearly understand the difference between remedial work and lack of academic English proficiency. This type of assessment is difficult to attain because of the cost of testing students in their primary language.

Furthermore, the results of this study indicated that students who had resided in this country for an extended time and completed their formal high school education in the US tended to have lower college GPAs than students with foreign high school credentials. The question remains as to whether this was due to home environment, lack of continuity in primary language instruction, lack of expectation on the part of teachers, or special education needs confused with lack of communicative English abilities.

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Table 1
Definition of Variables and Sources of Data

Variable	Definition	Source
Gender (socio-demographic)	Male or female	University Office of Institutional Research and Analysis. Cohort 1990 Data Self-reported on application
Ethnicity (socio-demographic)	White, Black, Hispanic, Asian, and American Indian	University Office of Institutional Research and Analysis. Cohort 1990 Data Self-reported on application
Native Language (socio-demographic)	Student first and primary language. Coded using frequency distributions as Spanish, Russian, Korean, Haitian Creole, French, Chinese, and other	University Office of Institutional Research and Analysis. Cohort 1990 Data Self-reported on application
Parental Education (socio-demographic)	Level of formal education completed by father and mother. Coded as less than 8th grade, some high school, high school graduate, some college, and college graduate and beyond.	University Office of Institutional Research and Analysis. Cohort 1990 Data Self-reported on student questionnaire
Welfare Status (socio-demographic)	Welfare or not welfare recipients Coded as yes or no	University Office of Institutional Research and Analysis. Cohort 1990 Data Self-reported on student questionnaire
Length of Residence (language acquisition)	Number of years resided in the US. Coded as less than 2, 3 to 5, 6 to 10, and more than 10.	University Office of Institutional Research and Analysis – Cohort 1990 Data Self-reported on student application
High School Type (language acquisition)	School where college immigrant completed high school. Coded as USA, foreign or GED	University Office of Institutional Research and Analysis. Cohort 1990 Data Self-reported on application
Academic Major (college experience)	Major declared by student Coded as undecided, math-dominant, and non-math dominant	University Office of Institutional Research and Analysis. Cohort 1990 Data
College Credits Completed (college experience)	Number of college credits for which the student enrolled and completed for each semester and year studied	University Office of Institutional Research and Analysis. Cohort 1990 Data
Reading Test – RAT (academic placement)	The university Freshman Skills Reading Assessment Test	University Office of Institutional Research and Analysis. Cohort 1990 Data
Math Test – MAT (academic placement)	The university Freshman Skills Math Assessment Test	University Office of Institutional Research and Analysis. Cohort 1990 Data
Writing Test – WAT (academic placement)	The university Freshman Skills Written Assessment Test	University Office of Institutional Research and Analysis. Cohort 1990 Data
GPA Fall 1990 (dependent variable)	Grade point average for college credit bearing courses in Fall 1990	University Office of Institutional Research and Analysis. Cohort 1990 Data
GPA Spring 1991 (dependent variable)	Grade point average for college credit bearing courses in Spring 1991	University Office of Institutional Research and Analysis. Cohort 1990 Data
GPA Spring 1992 (dependent variable)	Cumulative grade point average for college credit bearing courses through Spring 1992	University Office of Institutional Research and Analysis. Cohort 1990 Data

23

Table 2.
Student Characteristics

Variable	Group	Semester 1 (%)	Semester 2 (%)	Year 2 (%)
Gender	Female	58.8%	58.8%	60.2%
	Male	41.2%	41.2%	39.8%
Ethnicity	White	17.3%	17.6%	20.3%
	Black	12.7%	13.8%	12.8%
	Hispanic	38.4%	36.6%	31.5%
	Asian	31.6%	31.9%	35.5%
Native Language	Spanish	39.5%	37.4%	31.9%
	Chinese	16.3%	15.7%	17.4%
	French	4.5%	4.9%	4.8%
	Haitian Creole	5.4%	5.6%	5.2%
	Korean	2.1%	2.3%	2.1%
	Russian	8.4%	9.4%	10.9%
	Other	23.3%	24.7%	27.7%
Father's Education	High school grad	19.1%	18.9%	18.7%
	Less than 8th grade	31.9%	31.4%	29.2%
	Some high school	15.1%	15.1%	14.7%
	Some college	8.3%	8.5%	9.1%
	College graduate or post graduate	25.6%	26.1%	28.3%
Mother's Education	High school grad	20.5%	19.6%	19.6%
	Less than 8th grade	37.1%	36.6%	35.4%
	Some high school	17.5%	18.1%	16.9%
	Some college	7.4%	7.7%	8.5%
	College graduate or post-graduate	17.6%	17.9%	19.6%
Father's Occupation	Blue collar	44.7%	45.3%	43.5%
	White collar	55.3%	54.8%	56.5%
Mother's Occupation	Blue collar	17.7%	18.8%	19.2%
	White collar	47.1%	46.8%	49.6%
	Homemaker	35.2%	34.3%	31.2%
Household Income	Lowest to 10,000	39.7%	39.7%	40.9%
	10,001 to 20,000	32.4%	32.3%	30.5%
	20,001 to 30,000	14.6%	14.6%	14.2%
	Above 30,000	13.3%	13.5%	14.4%
Welfare Status	Receiving	24.0%	24.6%	23.7%
	Not Receiving	76.0%	75.4%	76.3%
High School Type	GED	14.1%	13.3%	10.9%
	US HS	61.7%	62.3%	64.5%
	Foreign HS	24.3%	24.3%	24.7%

Length of Residence in US	0-2 years	15.1%	15.2%	17.0%
	3-5 years	10.3%	10.3%	9.6%
	6-10 years	32.8%	32.9%	33.6%
	More than 10 years	41.8%	41.6%	39.8%
Academic Major	Math-dominant	31.7%	34.0%	37.0%
	Non math	39.3%	39.2%	35.7%
	Undecided	29.0%	26.8%	27.2%

Table 3.
Summary of Academic Variables

Variable	Semester 1 Mean (standard deviation)	Semester 2 Mean (standard deviation)	Semester 3 Mean (standard deviation)
Semester GPA	2.82 (0.97)	2.62 (0.99)	
Cumulative GPA			2.74 (0.66)
Math Score	24.94 (9.68)	25.13 (9.61)	26.95 (9.14)
Writing Score	5.20 (2.00)	5.18 (1.98)	5.37 (1.95)
Reading Score	9.65 (6.08)	9.61 (5.99)	10.45 (5.99)
Semester Credits	6.88 (3.79)	9.24 (4.19)	
Cumulative Credits			43.36 (11.63)

24

Table 4
Multiple Regression Results: Cohort Fall 1990

Variable	Block 1 Socio-demographic		Block 2 Socio-demographic & Language Acquisition		Block 3 Socio-demographic, Language Acquisition &College Experiences		Block 4 Socio-demographic, Language Acquisition, College Experiences & Placement Tests	
	Beta	t	Beta	t	Beta	t	Beta	t
1.Gender: Male	-.032	-1.01	-.045	-.145	-.035	-1.14	-.052	-1.70
2.Black	-.002	-.043	-.007	-.125	-.016	-.299	-.004	-.077
3.Asian	.004	.067	-.016	-.273	.004	.073	-.012	-.213
4.Hispanic	.017	.171	.044	.471	.064	.691	.083	.903
5.Chinese	.027	.293	.057	.647	.039	.451	-.015	-.170
6.French	.040	.711	.046	.850	.061	1.15	.049	.929
7.Haitian-creole	-.003	-.054	.016	.276	.031	.558	.021	.381
8.Korean	.002	.033	.019	.417	.015	.331	-.001	-.019
9.Russian	.075	1.068	-.011	-.156	-.033	-.486	-.049	-.724
10.Other languages	.113	1.220	.124	1.38	.079	.890	.072	.815
11.Father some high –school	.002	.051	.003	.069	.008	.208	.012	.308
12.Father high school graduate	.000	-.001	-.013	-.310	-.018	-.420	-.007	-.158
13.Father some college	.000	.002	-.003	-.072	-.003	-.078	-.001	-.028
15.Father college graduate and plus	.048	.843	.040	.725	.042	.783	.052	.981
16.Mother some high school	.026	.641	.020	.524	-.002	-.053	-.004	-.104
17.Mother high school graduate	-.032	-.672	-.033	-.751	-.034	-.796	-.042	-.973
18.Mother some college	.003	.087	.000	.001	-.029	-.764	-.034	-.895
19.Mother college graduate and plus	-.017	-.323	-.035	-.678	-.052	-1.01	-.067	-1.31
20.Welfare as SES	-.040	-1.11	-.048	-1.36	-.045	-1.30	-.049	-1.44
21.LOR 3-5years			-.009	-.238	-.011	-.282	-.006	-.155
22.LOR 6-10 years			**-.153**	-2.83	**-.140**	-2.63	-.114	-2.15
23.LOR 10+years			**-.171**	-3.07	**-.168**	-3.08	-.126	-2.26
24.US-HS			**-.146**	-2.95	**-.144**	-2.94	**-.147**	-3.01
25.For-HS			.041	.744	.071	1.32	.047	.882
26.Credits C					**.204**	6.26	**.181**	4.67
27.Nonmath majors					.054	1.53	.073	2.08
28.Undecided majors					-.085	-2.46	**-.096**	-2.78
29.MAT							**.157**	3.73
30.WAT							-.082	-1.99
31.RAT							.008	.210
R^2	.016		.082		.122		.136	
R^2_{change}			.066		.040		.015	

Note. $p < .01$ are in bold.
Dependent Variable: Semester GPA Fall 1990, M=2.9

Table 5
Multiple Regression Results: Spring 1991 Cohort.

Variable	Block 1 Socio-demographic		Block 2 Socio-demographic & Language Acquisition		Block 3 Socio-demographic, Language Acquisition &College Experiences		Block 4 Socio-demographic, Language Acquisition, College Experiences & Placement Tests	
	Beta	t	Beta	t	Beta	t	Beta	t
1.Gender: Male	**-.083**	**-2.58**	**-.093**	**-2.97**	**-.082**	**-2.68**	**-.102**	**-3.33**
2.Black	-.045	-.795	-.061	-1.08	-.039	-.725	-.015	-.270
3.Asian	-.056	-.935	-.063	-1.08	-.041	-.729	-.047	-.833
4.Hispanic	-.185	-1.98	-.179	-1.95	-.141	-1.60	-.107	-1.23
5.Chinese	-.007	-.084	.001	.011	-.039	-.487	-.068	-.840
6.French	-.071	-1.32	-.073	-1.39	-.084	-1.66	-.086	-1.71
7.Haitian-creole	-.098	-1.69	-.087	-1.53	-.093	-1.71	-.092	-1.71
8.Korean	-.030	-.646	-.027	-.590	-.025	-.571	-.038	-.867
9.Russian	.010	.149	-.081	-1.15	-.089	-1.31	-.099	-1.49
10.Other languages	-.007	-.081	-.010	-.117	-.066	-.787	-.068	-.812
11.Father some high –school	-.016	-.397	-.012	-.305	-.022	-.575	-.016	-.413
12.Father high school graduate	-.017	-.376	-.021	-.479	-.032	-.736	-.026	-.603
13.Father some college	-.002	-.050	-.001	-.019	.000	.010	-.003	-.070
15.Father college graduate and post	.047	.805	.043	.759	.014	.252	.022	.395
16.Mother some high school	.025	.609	.025	.625	.011	.287	.003	.091
17.Mother high school graduate	-.006	-.127	-.019	-.419	-.009	-.210	-.019	-.435
18.Mother some college	.053	1.27	.041	1.00	.008	.212	.007	.168
19.Mother college graduate and post	.010	.186	-.005	-.101	-.019	-.373	-.038	-.743
20.Welfare as SES	-.029	-.787	-.047	-1.29	-.041	-1.18	-.038	-1.10
21.LOR 3-5 years			-.073	-1.77	-.051	-1.27	-.050	-1.28
22.LOR 6-10 years			**-.167**	**-2.93**	**-.140**	**-2.57**	**-.125**	**-2.29**
23.LOR > 10 years			**-.203**	**-3.47**	**-.167**	**-2.96**	**-.154**	**-2.68**
24.US-HS			**-.186**	**-3.65**	**-.192**	**-3.91**	**-.203**	**-4.15**
25.For-HS			-.035	-.617	-.006	-.102	-.023	-.423
26.Credits C					**.280**	**8.79**	**.220**	**6.16**
27.Nonmath majors					-.003	-.080	.020	.570
28.Undecided majors					-.063	-1.85	-.072	-2.12
29.MAT							**.156**	**3.75**
30.WAT							-.084	-2.07
31.RAT							**.099**	**2.53**
R^2	.050		.105		.175		.196	
R^2_{change}			.055		.070		.022	

Note. $p < .01$ are in bold.
Dependent Variable: Semester GPA Spring 1991, M=2.7

Table 6
Multiple Regression Results: Spring 1992 Cohort

Variable	Block 1 Socio-demographic		Block 2 Socio-demographic & Language Acquisition		Block 3 Socio-demographic, Language Acquisition & College Experiences		Block 4 Socio-demographic, Language Acquisition, College Experiences & Placement Tests	
	Beta	t	Beta	t	Beta	t	Beta	t
1.Gender: Male	-.032	-.859	-.053	-1.49	-.036	-1.12	-.054	-1.70
2.Black	.004	.057	-.045	-.734	-.065	-1.20	-.050	-.924
3.Asian	-.041	-.612	-.065	-1.00	-.048	-.821	-.052	-.902
4.Hispanic	-.105	.995	-.082	-.821	-.028	-.315	.039	.432
5.Chinese	.067	.649	.092	.932	.081	.918	.069	.787
6.French	-.041	-.638	-.020	-.326	.013	.231	.023	.417
7.Haitian-creole	-.136	-1.94	-.109	-1.63	-.075	-1.25	-.052	-.883
8.Korean	.022	.425	.031	.614	.029	.640	.025	.576
9.Russian	.081	.940	-.017	-.205	-.052	-.702	-.403	-.585
10.Other languages	.100	.919	.109	1.05	.050	.538	.069	.747
11.Father some high school	-.040	-.869	-.028	-.646	-.014	-.366	-.006	-.146
12.Father high school graduate	.098	1.84	.084	1.66	.080	1.78	.090	2.01
13.Father some college	.042	.859	.057	1.24	.060	1.45	.058	1.43
15.Father college graduate and post	.009	.126	.016	.244	.005	.079	.015	.263
16.Mother some high school	.087	1.88	.079	1.80	.032	.803	.016	.403
17.Mother high school graduate	-.009	-.164	-.016	-.318	-.034	-.745	-.057	-1.28
18.Mother some college	-.004	-.077	-.029	-.622	-.072	-1.71	-.087	-2.10
19.Mother college graduate and post	.031	.485	.015	.249	-.008	-.144	-.044	-.807
20.Welfare as SES	-.026	-.599	-.069	-1.67	-.043	-1.14	-.031	-.852
21.LOR 3-5 years			-.039	-.864	-.019	-.471	-.013	-.324
22.LOR 6-10 years			**-.176**	**-2.80**	-.107	-1.89	-.090	-1.60
23.LOR >10 years			**-.240**	**-3.71**	**-.169**	**-2.88**	**-.151**	**-2.54**
24.US-HS			**-.304**	**-5.03**	**-.283**	**-5.18**	**-.310**	**-5.73**
25.For-HS			-.097	-1.44	-.030	-.487	-.039	-.653
26.Credits C					**.426**	**12.8**	**.364**	**10.10**
27.Nonmath majors					.079	2.16	**.100**	**2.73**
28.Undecided majors					-.025	-.717	-.045	-1.26
29.MAT							**.188**	**4.50**
30.WAT							.001	.018
31.RAT							.039	.963
R^2	.064		.167		.334		.357	
R^2_{change}			.103		.167		.023	

Note. $p<.01$ are in bold.
Dependent Variable: Semester GPA Spring 1992, M=2.8

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