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ABSTRACT

Most existing research suggests that financial aid has a positive effect on minority student persistence although there are few multivariate studies that analyze the benefits of financial aid to Hispanic undergraduates at four-year colleges. This study used path analysis to evaluate the strength of various predictors of student persistence, including financial aid, for a population of first-year full-time Hispanic students at a large southwestern university. The study included 874 recent graduates of New Mexico high schools who attended the university full time in fall 1998. Results of the path analysis show that college grades, dormitory residence, and receipt of work-study have the strongest direct and total effects on Hispanic student persistence. Merit scholarships and grants have smaller positive contributions to persistence for this sample. (Contains 5 tables, 3 figures, and 34 references.) (Author/SLD)

The Role of Financial Aid in Hispanic First-Time Freshman Persistence

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Most existing research suggests that financial aid has a positive effect on minority student persistence although there are few multivariate students that analyze the benefits of financial aid to Hispanic undergraduates at four-year colleges. The current research uses path analysis to evaluate the strength of various predictors of student persistence, including financial aid, for a population of first-year full time Hispanic students at a large southwestern university. Results of the path analysis show that college grades, dormitory residence, and receipt of work-study have the strongest direct and total effects on Hispanic student persistence. Merit scholarships and grants have smaller positive contributions to persistence for this sample.

The Role of Financial Aid in Hispanic First-Time Freshman Persistence

First-time freshman persistence is a recurring concern at almost all universities and colleges. Schools with significant minority student populations have an important stake in addressing student achievement for special populations. Student affairs professionals, especially on predominantly white campuses, have developed a variety of programs to support minority students, many of whom may be first-generation college students. Support programs cover a wide area of student concerns, both academic and social, for example, pre-collegiate programs such as "bridge" to college summer programs, student orientations, special advising programs, first-year seminars, tutoring, and career planning. Financial aid is another type of student support, meant to encourage both enrollment and persistence. When retention, and particularly minority retention, is part of the institutional mission, understanding the effects of different support programs is imperative. Financial aid is one of the least understood elements of the student support environment. For example, the research on the role of financial aid in student achievement is somewhat contradictory. When research confirms that financial aid has a positive effect on student persistence, these studies do not always make explicit the processes through which it operates.

Generally, financial aid is seen as an equalizer of the "opportunity to persist" for groups whose educational attainment is historically low. Since educational attainment is a gatekeeper to social mobility, the concern over student persistence goes beyond the borders of the college campus. Society-at-large has a stake in student outcomes, especially when federal and state dollars are a major source of the investment in public higher education.

Most students cannot attend college without some form of financial aid, whether they attend public or private institutions. Many students work at least part-time to cover college expenses, and many more undergraduates work over twenty hours a week to pay for living costs as well as tuition, fees, and books. The information on the impact of financial aid, whether in the form of grants, loans, work-study, or even merit scholarships, is of consequence to all stakeholders in public education: students, parents, colleges and universities, and the larger society.

REVIEW OF THE LITERATURE

Early studies on the role of financial aid ask two questions: does financial aid play a positive role in students persistence, and if so, which types of aid are most effective. These studies find that receiving aid plays a small but

significant, positive role in students' decisions to remain in college, particularly for lower-income students and minorities (Murdock, 1987, 1990). However, findings are inconsistent. Some studies report that financial aid is effective in encouraging persistence, without specifying the amount or type of aid received (Jensen, 1981; Terkla, 1985). Studies that measure total amount of aid awarded report that persistence and financial aid have a positive relationship (Somers, 1995). Voorhees (1985) finds that all forms of financial aid, alone or in combination with other types, has a positive effect on persistence. Perna (1998) reports that financial aid packaging is a factor in encouraging students to persist. Recently, researchers have acknowledged their concern about inconclusive study results (St. John, 2000).

Other research findings demonstrate the significance of specific forms of student aid. For example, McKenzie (1998) finds that work-study has a positive impact on persistence. Other studies also report a positive relationship between receipt of work-study awards and persistence. (Herndon, 1984; Olivas 1986; Perna, 1998; Porter, 1992; Velez, 1985).

Astin (1975) finds that grants have a small positive effect on persistence, and loans have a negative effect. Herndon (1984) also reports that loans have a negative relationship to persistence. In contrast, later studies (Baker and Velez, 1996; Perna, 1998) report that loans and persistence are positively correlated.

Carroll (1987) reports that grant recipients at public institutions drop out at lower rates than non-recipients; however, persistence rates as measured by credits completed do not respond to type nor amount of aid. Carroll (1987) also finds that larger grants provide better protection against dropping out. On the other hand, Paulsen and St. John (1997) report that grant aid is negatively related to persistence in public colleges. Once food, housing, travel, and tuition costs are controlled, however, grants have no significant relationship to persistence. Murdock's meta-analysis (1990) reveals that grants in combination with loans have the strongest impact on persistence.

In a study of students enrolled in a fine arts college at a public commuter institution, Schuh (1999) finds that the size of merit scholarships is the only important predictor of persistence. High school grade point average and ACT scores were not significant predictors of graduation in his sample.

Despite the studies mentioned above that find differential impacts of the various types of financial aid, Murdock (1990) reports that the variations in the effects of different types of aid on persistence were small.

An important development in the study of the role of financial aid and persistence is the use of causal models. Causal models elucidate the multivariate antecedents to persistence and place financial aid in a context of other predictors of student achievement. Cabrera, Stampen and Hansen (1990) incorporated ability to pay into Tinto's (1987, 1993) model of student integration. Other studies build on Tinto's conceptual model through taking into account the role of family socioeconomic status (SES), academic preparation, various campus experiences and environmental variables, and financial aid variables in a student integration model. In general, these studies utilize regression techniques to determine the unique contribution of financial aid variables to variation in persistence. Moline (1987) found that academic preparation, financial aid variables, and cumulative college grade point averages have positive effects on persistence as measured by the number of credits completed. St. John, Hu and Tuttle (2000) looked at several cohorts of students and found that results varied, depending on academic year. Among the various findings are that all types of aid packages have a neutral effect, work-study recipients are more likely to persist, and recipients of grant/loan packages are more likely to persist. Braunstein, McGrath, and Pescatrice (2000-2001) report that family income, not receipt of financial aid, impacts students persistence. Using path analysis, Perna (1998) finds that financial aid provides low-income students with the means to continue to matriculate, thereby equalizing the impact of income.

The initial impetus for the Higher Education Act of 1965, which authorized student financial aid programs, is to provide equal access to post-secondary education for all income groups. Access without persistence would be fruitless. Educators and researchers necessarily interpret the goals of the legislation to include equal opportunity to attend college as well as to graduate. Historically, minority status and lower-income status have been closely identified. Several studies confirm that financial aid helps to equalize opportunities for diverse groups (Cabrera, Nora, & Casteneda, 1992; St. John, Hu and Weber, 2000; Stampen and Cabrera, 1988). Nora (1990) reports that financial aid was the major factor in Hispanic community college student retention. Baker and Velez (1996) report that most forms of financial aid strengthen the persistence of minority students, with the exception of loans. In

contrast to these studies, Murdock (1990) found that minority undergraduates receiving financial aid had lower persistence rates than white recipients. When evaluating the impact of financial aid on minority students, keep in mind that financial aid funding has changed from the 1970's through the 1990's. The amount of grant money has decreased, and loans have become a more common form of aid (Baker and Velez, 1996; Fenske, Dillon and Porter, 1997; Stampen and Layzell, 1997). Middle class families are more willing to take out loans to finance a college education (Baker and Velez, 1996; Stampen and Layzell, 1997) while Hispanics are more likely to work rather than take out loans (King, 1999). However, Hispanic students who complete their degrees are more likely to borrow money for school than Hispanics who do not complete their education (King, 1999).

We can draw several conclusions from the above review. First, there are few conclusive findings about the effectiveness of financial aid on student persistence. Among them are these: financial aid has some impact on student persistence; its effect is probably transmitted indirectly through other variables; and work-study is likely to provide more benefits to students than other types of need-based aid. Second, since different studies operationalize both financial aid and persistence in a variety of ways, it is essential to be explicit about our measures. Third, it is too early to proscribe or prescribe the use of any model for explaining how financial aid is implicated in students' decisions to matriculate, or to limit the research case to either single institutions or national samples. Although single institution studies have been criticized (Pantages and Creedon, 1978), St. John (1992) suggests that institution-based studies can support financial planning. We must conclude that institutional researchers are still on the learning curve on the question of how financial aid impacts student success. And lastly, there is less research on how financial aid variables affect minority students than on the role of financial aid in general. Most likely, financial aid benefits minority students. Additional research is required.

This study employs a conceptual framework based on Tinto's (1987, 1993) theory of student departure. It considers the interrelationships of student characteristics, academic preparation, and campus experiences that enhance academic and social integration. This research project contributes to the conversation about the role of financial aid and minority student achievement. It focuses specifically on first-time first year Hispanic undergraduates at a public four-year university in the southwest.

METHODOLOGY

The present study employs path analysis to examine the effects of financial aid on Hispanic student persistence using data from university enrollment and financial aid databases. Path analysis is a method for examining the structural relationships between variables and the processes through which independent variables affect outcomes (Asher, 1983). At each stage of a path model, an endogenous variable, that is, one considered dependent in that stage of the model, is regressed on the variables it depends on. Each path coefficient is equal to the beta, the standardized regression coefficient, associated with that variable.

Path analysis provides a method for testing conceptual models. It determines the direct, indirect, and total effects of the independent variables on persistence. The results of a path analysis can lead to the elimination of paths with small path coefficients, resulting in more parsimonious models. Eliminating paths, while requiring examination of the statistics, also depends on meaningful theory (Kerlinger and Pedhazer, 1973). The goal of this paper is to explain Hispanic student persistence by evaluating successive iterations of a path model.

In this study, I begin with the more fully identified model of student persistence. After examining both path and correlation coefficients, I eliminate any paths that are less than .05 or where the path coefficient is much smaller than the correlation coefficient. I test two successive iterations of that model. For the second model, I eliminate any paths that are less than .10, excepting financial aid variables when to do so would eliminate them from the model completely. The third and final model is explicated fully in this paper. The goal is to develop a more parsimonious model that is also meaningful for my sample.

Variables

The variables for this study are available in the university's financial aid and student enrollment databases. In addition to financial aid measures, the predictor variables include family SES, pre-college academic ability, and two measures of college integration, dormitory residence and college grades.

Three measures of family socioeconomic status are used: mother's education, father's education and income are reported on the FAFSA and stored in the financial aid data base. Education is coded in the following way: '1'

indicates that a parent has completed middle school; '2' indicates that a parent has completed high school; and '3' indicates that a parent has completed college or beyond. Income is the total family income divided by household size for the FAFSA year.

Two measures of academic preparation are used: ACT composite score and high school grade point average. Nearly the entire cohort (95.5%) submitted ACT scores to the university. For students who took the SAT only, the total SAT score is converted to an ACT composite score. High school grade point average is the average of all previous academic work from an accredited high school. Grades in all courses allowed toward high school graduation are computed in the average.

Two measures of college experience are used as indicators of social and academic integration: campus residence and cumulative second semester grade point average. Campus residence, an indicator of social integration, is the number of semesters a student has lived on campus. Cumulative second semester grade point average is used as an indicator of academic integration.

In this analysis, five types of financial aid awards are considered: amount of money received from loans, grants, work-study, prestige scholarships, and other scholarships. All measures are taken from fall 1998, the first semester enrolled. Grant money comes primarily in the form of Pell grants. Work-study is federal or state funded on-campus employment opportunities. In order to be considered for a prestige scholarship, students must meet certain ACT composite score or high school grade point average criteria. Like prestige scholarships, the category "other scholarships" are primarily merit scholarships and are generally awarded by academic departments to promising students.

Another scholarship is available to first-time freshmen but it is excluded from the analysis. New Mexico high school graduates who attend the university immediately after high school are eligible to receive a Bridge to Success scholarship in their first semester provided they earned a 2.5 high school cumulative grade point average. The majority of students in the study cohort, 86%, received the Bridge.

Persistence is a measure of remaining in school or graduating within the time frame of the study, fall 1998 through spring 2002. Persistence is defined as the number of semesters persisted. It is measured on a 15-point scale, with a value of '1' representing entering but not completing semester 1; a value of '2' representing completing semester 1; a value of '3' representing entering but not completing semester 2; a value of '4' representing completing semester 2; through value 15 representing enrolling for the eighth semester.[1] Students who graduated are coded as having completed the semester in which they earn their degree. Stop-outs are included in the study data.

Description of the Sample

The study focuses on the impact of financial aid on Hispanic students who were part of the 1998 first-time freshmen cohort. The study included 874 recent graduates of New Mexico high schools who attended the university full time in fall 1998. The average age in the sample is 18.5 years of age. The majority (62.2%) of the students are female. Sex does not play an important role in accounting for the variation in persistence, explaining only .004% of the variance. Slightly over half of students' fathers completed high school only (52.3%) and 44.2% completed at least a college degree. Mothers are slightly less likely to have completed college: 39.8% completed a college degree or beyond, and 57.2% completed high school only. The median family income is $35,840; the mean family income is $40,304. Median per capita income, family income adjusted for family size, is $9,663, and the mean income is $11,044. One fourth of the students have annual family incomes greater than $57,000. The average high school grade point average is 3.22 (mean and median). The average ACT score is 21, with a minimum of 11 and a maximum of 33.

Campus residence is not typical for students at this university, half of whom graduated from local high schools. A little over one-fourth of students in the sample (26.5%) ever live in the dormitories. For students who have ever been dormitory residents, the average number of semesters residing on campus is 2.43. The average cumulative second semester grade point average is 2.5 with a median of 2.6. The average score on the persistence scale is 10.77. This score can be roughly translated as suggesting that the average student persists at least through the fifth semester.

[1] The 1998 cohort is the first entering freshman class for which the FAFSA data was retained by the Computer Information Department. The data were analyzed in spring 2002, ruling out the inclusion of the completion of the eighth semester, or fourth year, or any students who graduated in the eighth semester.

Table 1: Means and Standard Deviations for All Variables in the Model Here

When all awards, including the Bridge, are considered, nearly all students in the study (99.5%) received at least one financial aid award. Forty-nine percent of the students received only one award. The mean amount of total dollars awarded is $2,003; the median amount is $1,200. When the Bridge is excluded from the computations, 54.1% of the students received at least one financial aid award, with a mean amount awarded of $2,064 and a median amount of $1,857.

Analytical Models Tested

This section explains the choices and rationales for the models used in the study. Model One considers the direct effects of parental education and family income on academic achievement in high school as measured by high school grade point average and ACT composite score. It also considers the indirect effect of parental education through family income. Family SES is a traditional predictor of academic achievement. Educated parents who have disposable income are more likely to provide the material and cultural resources that supplement their children's formal schooling.

Prior academic achievement, as measured by ACT composite score and high school grade point average, is seen as influencing the choice to live in the dormitories. Academic achievers who desire a studious environment may be more likely to choose campus housing when available. Also, living on campus may be perceived as costing more than off-campus housing, and certainly more costly than commuting from the family residence. Thus, income is posited as having a direct path to campus residency.

Need-based aid is independent of student's academic ability, therefore there were no paths indicated between student academic preparation and receipt of financial aid. Family income is posited as having a direct effect on receipt of need-based financial aid. Lower-income students are be more likely to receive grants and work-study. Students from the higher-income groups are be more likely to borrow money to pay for their education, based on research that finds that middle- and upper-class families are more comfortable with borrowing money for their

children's education (Baker and Velez, 1996; Stampen and Layzell, 1997). The first model does not include any prestige-based scholarship aid.

A student's prior academic achievement is seen as having an effect on college grades: there is a direct path from both ACT composite score and from high school grade point average to second semester cumulative college grade point average. Other influences on grade point average include the amount of aid received in three categories: loans, work-study, and grants. A student who makes a fiscal investment in his or her education by taking out a loan will want to maximize his or her investment, and thus attempt to, and, hopefully, do well in school. Grants may be a means to equalize the differences in achievement inherent in income disparities among students. Since work-study money generally comes to students in the form of a paycheck and not in a lump sum as do grants and loans, its impact as a form of financial subsidy would work differently. It provides pocket money rather than a direct way to pay for educational expenses, much in the way that a part-time off-campus job operates. However, the benefit of a work-study job is its integrative mechanism by providing on-going and reliable contacts with administrators and faculty, and giving the student a different view of the campus, one that probably helps them to understand and better navigate the bureaucracy. All three forms of financial aid are posited as having direct links with persistence.

The other predictors of college grade point average include income and campus residence. Coming from a higher income family may represent freedom from having to work to finance one's education. This explanation is predicated on the assumption that higher income parents help with expenses. Living on campus provides students with greater contact with other students, faculty and administrators, greater access to college events and facilities, and an overall sense of being part of a community. Greater engagement is considered a factor in academic achievement. Currently, student engagement is receiving a lot of national attention.

Merit-based scholarships are added to Model Two. They are interposed between ACT score and dormitory residence. ACT scores act as gatekeepers for receiving prestige scholarships. Prestige scholarships often provide support for living on campus. As stated earlier, valuing education attainment may lead students to choose on-campus housing. Since prestige scholarships are based on high school achievement, they are directly linked with both college grades and persistence.

Table 2: Correlation Coefficients Here

In Model One, the direct effects on persistence include living in the campus dormitories, second semester grade point average, and the amount of aid received in the three aid categories. In Model Two, only work-study is retained from the initial model and merit-based scholarships are added as direct predictors of persistence.

RESULTS

Path analysis employs a series of regression analyses to determine path coefficients. For the first model, the most fully identified model, the following regression analyses are conducted in the order described. Income is regressed on mother's education and father's education. ACT composite score is regressed on income, father's education and mother's education. High school grade point average is regressed on income, father's education, and mother's education. The three need-based sources of financial aid were regressed separately on income. Dormitory residence is regressed on the academic achievement variables and income. Second semester cumulative college grade point average is regressed on the pre-college academic achievement variables, income, dormitory residence, and the three need-based sources of financial aid, loans, work-study, and grants. Persistence is regressed on the three types of need-based financial aid, dormitory residence, and the cumulative college grade point average.

Model One and Two path diagrams are presented in Figures 1 and 2. The path coefficients from the first two models are presented in Tables 3 and 4. The final model, Model Three, is presented in Figure 3. Table 5 presents the direct, indirect, and total effects of the final model.

Table 3: Path Coefficients in Model One Here

Eliminating Paths

The results of the path analysis for Model One are displayed in Table 3. I modified the model for a better fit and consideration of alternative understandings of Hispanic students' academic progress. The path coefficients from

mother's and father's education to ACT score is slightly over .05, but not quite half the original correlation coefficient (see Table 2). The path coefficients to high school grade point average are negative and not significant, as are the correlation coefficients. All four paths are dropped from the model.

Figure 1: MODEL ONE Here

The path from family income to high school grade point average has a very small coefficient, in line with the original correlation coefficient, and is dropped from the model. Possibly, grade inflation in public high schools has diminished the impact of SES. The path from income to ACT composite score is much stronger and closer in value to the correlation coefficient and is retained in Model Two. Examination of the correlation matrix shows that the two prestige scholarships originally omitted from the path model have significant relationships with living on campus. There are many ways to specify or identify a path model, and choices need not be based empirical findings. Preferably, theoretical arguments would play a key role in making these decisions. In this case, it is felt that ACT score has a significant role to play in college success, although the empirical results of the path analysis for Model One obscured the relationship.

The path from high school grade point average to living in the dormitories has a path coefficient of .160 while the path from ACT score has small coefficient (.010). The latter path is eliminated from the model. In addition to the path between dormitory residence and ACT score being small, the path between ACT score and second semester grade point average is also very small. It is eliminated. I include the prestige scholarships in the second model between ACT scores and dormitory residence. They integrated ACT scores into the path to college success in a way that made sense: ACT is a gatekeeper for merit scholarships, which often enable students to live in the dormitories.

While the path from high school grade point average to dormitory residence has a moderate path coefficient (.106 in Model One) once the merit-based scholarships are added to the regression equation, it loses its strength (in Model Two). The path is dropped from the final model.

The direct paths to persistence that are eliminated are loans to persistence and grants to persistence. Both path coefficients are less than .05. The paths from dormitory residence, second semester college grade point average, and work-study award to persistence are kept in the path model.

Figure 2: MODEL TWO Here

Similar decisions are made when the results of the path analysis for Model Two are examined (Table 4). If a path coefficient is less than .10, it is dropped from the model. With the exception of the path from loans to college grades, the following paths are eliminated: high school grade point average to prestige scholarships; high school grade point average to dormitory residence; income to dormitory residence; other scholarships to college grades; prestige scholarships to college grades; other scholarships to persistence; and prestige scholarships to persistence.

Table 4: Path Coefficients in Model Two

Final Model

Model Identification and Direct Effects

Here I review the paths identified in Model Three as illustrated in Figure 3 and report the direct, indirect, and total effects on persistence for each exogenous variable, as reported in Table 5.

Figure 1 displays the path model described in this section. In Model Three, the direct relationship between parents' education and income is retained. Family income has a direct relationship to a student's score on a standardized national test of academic ability, the ACT. There is no relationship between family socioeconomic status and high school grade point average. Since SES has a positive relationship with a standardized national test that may contain some elements of cultural bias, it makes sense that higher income students with access to greater cultural capital as well as material well-being would score higher on a test of ability that draws on references and examples from the dominant culture.

Figure 3: MODEL THREE

For this sample, high school grade point average is an exogenous variable, with no antecedents in this model. It has a direct relationship with college grades, which suggests it is a valid measure of potential to achieve. ACT score is seen as a gatekeeper for merit-based scholarships, which themselves permit access to campus residence. Students with merit-based scholarships may be concerned about keeping the awards and so choose campus housing because it offers a more academic and studious environment. In that vein, living on campus is associated with higher college grades.

Table 5: Direct, Indirect, and Total Effects of Predictors on Persistence for Model Three Here

Although family SES does not have a relationship with high school grade point average in this study, it does have an impact on cumulative second semester college grade point average, though not as strong as the impact of high school grade point average. It could be that students who come from wealthier families have some financial support from them and are thus released from having to worry about financing school or working at jobs that interfere with their schooling. Another possibility is that coming from a higher income family has provided a student with opportunities and experiences that buttress their academic achievement.

Family income is a determinant of the amount of money a student receives from need-based aid programs. Students from higher income homes are more likely to borrow money, while those from lower income families are more likely to receive work-study and grant awards. Loans have a direct and small negative effect on college grades. Work-study has a direct and positive effect on college grades as does receiving grants.

Cumulative second semester grade point average, living in campus housing, and work-study award have direct and positive effects on persistence. Cumulative grade point average has been used in earlier studies as a measure of

academic integration and campus residence is an indicant of social integration. As discussed above, the main benefit of work-study awards is most likely their integrative function for the student.

Indirect Effects

All variables except cumulative grade point average have indirect effects on persistence. SES affects persistence indirectly, through scoring well on the ACT test, leading to college experiences that enhance both social and academic integration. High school grade point average has a strong indirect effect through college grade point average. Work-study has an indirect effect through college grades as do grant awards. Merit-based awards impact persistence through dormitory residence and college grade point average.

Total Effects

Financial aid has a positive effect on persistence. All types of financial aid make a positive contribution except for loans. Work-study is the third strongest predictor of persistence and much stronger than other forms of financial aid. Merit-based scholarships and grants have total effects of around .10, much less than work-study. Loans have a negative relationship with persistence, although its effect is close to zero at -.041.

Second semester cumulative grade point average has the strongest total effect on persistence. Living in campus housing has the next strongest total effect. High school grade point average is also a strong predictor of continued matriculation, as the fourth strongest predictor behind work-study award.

ACT score does not have great predictive value. Its total effect is only .036. In this study, family SES is also unlikely to predict persistence. However, the process through which SES affects persistence is confounded by the presence of both positive and negative path coefficients that cancel each other out. The path of family SES through ACT scores and merit scholarships and college grades result in a positive impact on persistence which is cancelled out by the negative relationship between income and need-based awards. Need-based awards like work-study and grants have a positive effect on persistence but because they are awarded to lower-income students, SES ends up having a negative total effect following this path.

When need-based financial aid variables are treated as exogenous variables, income has a positive total effect of .153, the fifth strongest predictor variable. Neither mother's nor father's education moves up from last place, however.

DISCUSSION

The present study employs path analysis to understand how family SES, academic preparation, college experiences, and financial aid funding affect persistence in a sample of first-time Hispanic in-state freshmen at a large state university in the southwest. The results of the path analysis demonstrate that this model, which is a modification of Tinto's student integration model, is a workable model of persistence for this sample of Hispanic students.

The greatest contributors to Hispanic student persistence are factors that increase student integration into college. Academic achievement in the early semesters of the college career, a measure of academic integration, is the strongest predictor of persistence. The number of semesters a student resides in campus housing is the second strongest predictor of persistence. Campus residence provides students with greater opportunities to interact with peers and faculty, to participate in extracurricular activities, and to experience the richness of campus life. Receiving a work-study award is the third most important predictor of persistence. Work-study awards are effective because they facilitate student integration and engagement with the campus.

The characteristics of the campus, although not part of this study, must be considered in future studies. For example, Hispanic students may benefit from their numerical strength on the campus. Hispanic students comprise 36% of the 1998 entering cohort, (and 36% of the entering 2001 cohort). The percent of Hispanic students in the undergraduate population at the university increased from 29% in 1997 to 33% in 2000. Secondly, in addition to integrative experiences measured in this study, the university offers organizations and activities, student support programs, and a curriculum that validate the cultural and social experiences of Hispanic students, possibly facilitating a greater sense of engagement and integration. In addition to numerical strength and integrative opportunities, one fourth of the faculty and staff on the main campus have Hispanic backgrounds. They serve directly or indirectly as role models while exposing students to possible educational and career paths.

Comparative research projects that examine variations in student, faculty, and staff representativeness and programmatic options and use would be a worthwhile focus as we endeavor to understand and support minority student persistence. Including students' participation in academic and social support programs would enrich the institutional path model and provide new measures of integration. Currently, the development of a database of student participation in student support programs aimed at ethnic and racial subgroups and in academic support programs such as tutoring and summer programs is underway, and additional measures of integration will be available.

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Table 1: Means and Standard Deviations for All Variables in the Model

VARIABLES	mean	sd	N
M-ED	2.37	0.54	565
F_ED	2.41	0.56	547
INCOME	$11,044	$7,601	454
ACT	21.15	3.77	860
HS GPA	3.22	0.48	866
Semesters in Dorms	0.66	1.39	874
Loan $	$1,875	$981	162
Work-Study $	$1,106	$449	87
Grant $	$1,229	$511	263
Prestige $	$1,385	$460	107
Other $	$1,043	$2,240	196
Cumulative GPA	2.43	0.957	858
Persistence	$11	$5	874

TABLE 2: CORRELATION COEFFICIENTS

VARIABLES	M_ED	F_ED	INCOME	ACT	HS GPA	Semesters in Dorms	Loan $	Work-Study $	Grant $	Prestige $	Other $	Cumulative GPA
F_ED	0.374*	-	-	-	-	-	-	-	-	-	-	-
INCOME	0.221*	0.223*	-	-	-	-	-	-	-	-	-	-
ACT	0.118*	0.112*	0.170*	-	-	-	-	-	-	-	-	-
HS GPA	-0.046	-0.044	0.010	0.448*	-	-	-	-	-	-	-	-
Semesters in Dorms	-0.016	-0.020	-0.053	0.122	0.144*	-	-	-	-	-	-	-
Loan $	0.262*	0.082	0.288*	-0.046	-0.156*	0.075	-	-	-	-	-	-
Work-Study $	0.032	0.230*	-0.113	-0.004	-0.045	0.014	-0.021	-	-	-	-	-
Grant $	-0.005	-0.058	-0.624*	-0.168*	-0.130*	-0.102	-0.346*	0.066	-	-	-	-
Prestige $	0.064	0.054	0.048	0.314*	0.158	0.196	-0.017	0.115	-0.113	-	-	-
Other $	-0.051	-0.008	0.084	0.166*	0.167*	0.264*	0.057	0.061	-0.031	0.006	-	-
Cumulative GPA	-0.018	0.036	0.080	0.227*	0.467*	0.206*	-0.138	0.187	-0.003	0.166	0.174*	-
Persistence	0.054	0.029	0.081	0.184*	0.311*	0.398*	-0.079	0.244*	0.023	0.116	0.143*	0.590*

* indicates a coefficient correlation was significant at the p = .05 or better.

Table 3: Direct Effects in Model 1 Path Analysis

PREDICTOR	Income	ACT Score	HS GPA	Loan $	Work-Study $	Grant $	Semesters in Dorm	Cum GPA	Persistence
Mother's Education	.160	.066	-.035	-	-	-	-	-	-
Father's Education	.163	.055	-.039	-	-	-	-	-	-
Income	-	.143	.026	.288	-.113	-.624	-.068	.255	-
ACT Score	-	-	-	-	-	-	.086	-.019	-
High School GPA	-	-	-	-	-	-	.106	.469	-
Loan $	-	-	-	-	-	-	-	-.083	-.016
Work-Study $	-	-	-	-	-	-	-	.220	.144
Grant $	-	-	-	-	-	-	-	.189	.040
Semesters in Dormitory	-	-	-	-	-	-	-	.177	.298
Cumulative GPA	-	-	-	-	-	-	-		.500

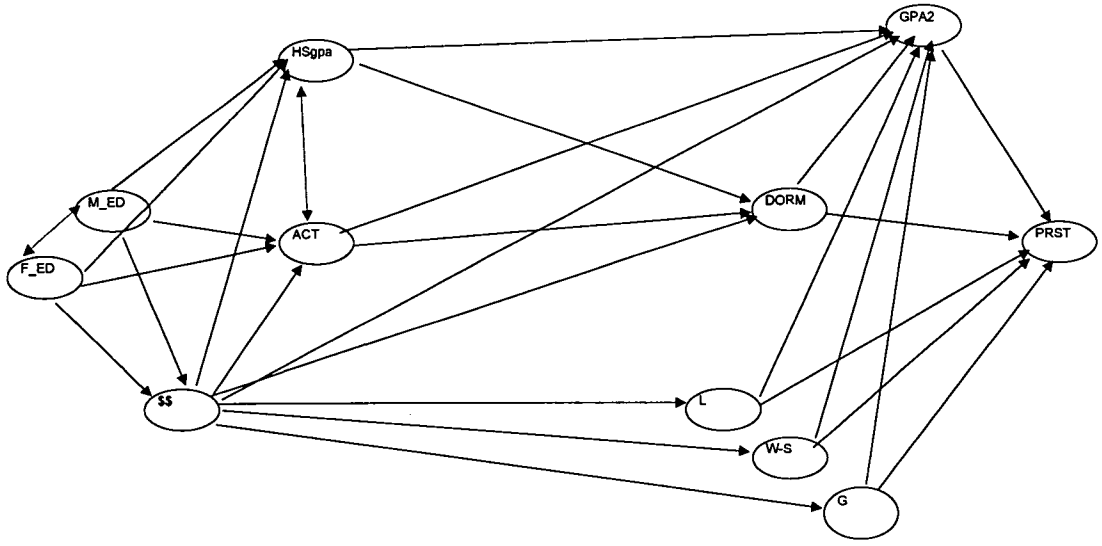
Table 4: Direct Effects in Model 2 Path Analysis

PREDICTOR	Income	ACT Score	HS GPA	Prestige $	Other $	Loan $	W-S $	Grant $	Dorm	Cum GPA	Persistence
Mother's Education	.160	-	-	-	-	-	-	-	-	-	-
Father's Education	.163	-	-	-	-	-	-	-	-	-	-
Income	-	.170	-	-	-	.288	-.113	-.624	-.084	.244	-
ACT Score	-	-	-	.304	.115	-	-	-	-	-	-
High School GPA	-	-	-	.022	.116	-	-	-	.072	.450	-
Prestige $	-	-	-	-	-	-	-	-	.187	.047	-.047
Other Scholarship $	-	-	-	-	-	-	-	-	.258	.034	-.037
Loan $	-	-	-	-	-	-	-	-	-	-.082	
Work-Study $	-	-	-	-	-	-	-	-	-	.211	.152
Grant $	-	-	-	-	-	-	-	-	-	.189	
Semesters in Dorms	-	-	-	-	-	-	-	-	-	.159	.309
Cumulative GPA	-	-	-	-	-	-	-	-	-	-	.512

Table 5: Direct, Indirect, and Total Effects of Predictors on Persistence
Model Three

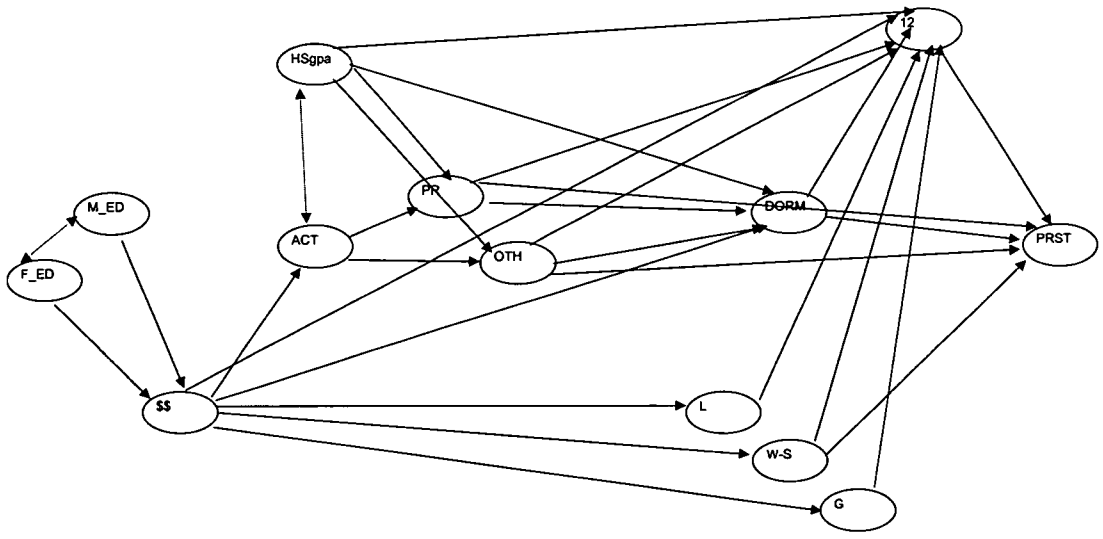
PREDICTOR (In Order of Total Effects)	DIRECT	INDIRECT	TOTAL
Cumulative GPA, Semester 2	0.503		0.503
Semesters in Dormitory	0.292	0.089	0.381
Work-Study $	0.146	0.110	0.256
High School GPA		0.232	0.232
Other Scholarship $		0.100	0.100
Grant $		0.096	0.096
Prestige $		0.074	0.074
Loan $		-0.041	-0.041
ACT Score		0.036	0.036
Income		0.026	0.026
Mother's Education		0.004	0.004
Father's Education		0.004	0.004

Figure 1: MODEL ONE



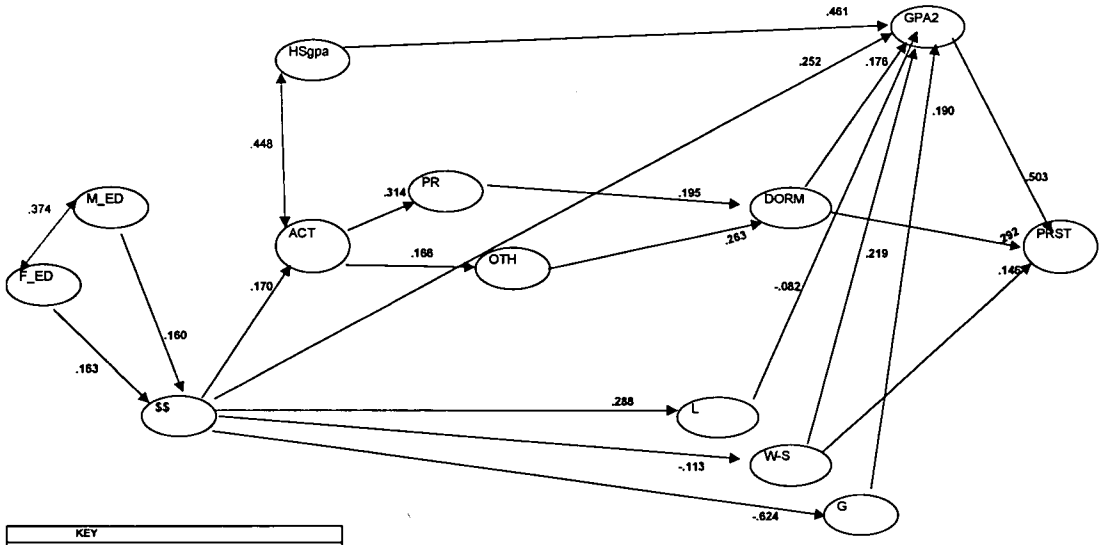
	KEY
M-ED	Mother's Education
F_ED	Father's Education
$$	Income
ACT	ACT Composite Score
HSgpa	High School Grade Point Average
PR	Amount from Prestige Scholarships
OTH	Amount from Other Merit-based Scholarships
L	Amount from Loans
W-S	Amount from Work-Study
G	Amount from Grants
DORM	Number of Semesters in Dormitories
GPA2	Cumulative Second Semester GPA
PRST	Number of Semesters Enrolled

Figure 2: MODEL TWO



	KEY
M-ED	Mother's Education
F_ED	Father's Education
$$	Income
ACT	ACT Composite Score
HSgpa	High School Grade Point Average
PR	Amount from Prestige Scholarships
OTH	Amount from Other Merit-based Scholarships
L	Amount from Loans
W-S	Amount from Work-Study
G	Amount from Grants
DORM	Number of Semesters in Dormitories
GPA2	Cumulative Second Semester GPA
PRST	Number of Semesters Enrolled

Figure 3: MODEL THREE



	KEY
M-ED	Mother's Education
F_ED	Father's Education
$$	Income
ACT	ACT Composite Score
HSgpa	High School Grade Point Average
PR	Amount from Prestige Scholarships
OTH	Amount from Other Merit-based Scholarships
L	Amount from Loans
W-S	Amount from Work-Study
G	Amount from Grants
DORM	Number of Semesters in Dormitories
GPA2	Cumulative Second Semester GPA
PRST	Number of Semesters Enrolled

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