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The Effect of Academic Load on Success for New College Students: Is Lighter Better?

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Both students and advisors often assume that a lighter academic load during the first year of college will result in greater student success. This article examines that assumption. Academic load is measured in terms of credit load and course difficulty; success is measured in terms of GPA and retention. The experiences of a sample of first-year students at a comprehensive regional university are examined. While the credit loads for which students register are related to academic ability and prior academic success, the difficulty level of courses for which these students register is not. Variation in student credit loads is reduced because weaker students are required to take developmental courses but do not drop a corresponding number of college-credit courses. Contrary to common assumptions, students who register for more credits tend to earn higher GPAs and have greater retention even after controlling for academic ability, prior academic success, on-campus employment hours, and other background characteristics. Students who register for more difficult courses, however, tend to earn lower GPAs and experience lower retention. Any effect of credit load on retention appears to work through GPA. While much of the effect of course difficulty on retention also works through GPA, course difficulty does have a separate negative effect on 1-year retention. While the possibilities that weaker students might be more successful with lighter credit loads or that stronger students might be more successful with more difficult courses were investigated, no significant interactions between prior academic success, academic load, and success were found.

KEY WORDS: retention, grade-point average, credit load, course difficulty, first-year students

What relationship, if any, exists between the difficulty of a new college student's academic load, as measured by credit load and course difficulty, and the student's first-year academic success as measured by grade-point average (GPA) and retention in college?

This question is of practical importance to beginning college students and advisors trying to determine an appropriate first-semester and first-year schedule. It is important to administrators concerned with overall retention and academic success. It has always been of interest to parents who pay for their child's college education, and it has recently become of interest to state legislatures and the public concerned with the length of time students are taking to complete their college degrees.

Course selection is the most common topic of conversation between students and their advisors (Habley, 1993). Common advice given to beginning college students is to make their first semester an academically easy one (e.g., Garni, 1994). Students are cautioned that college courses will be more difficult than high school. Furthermore, they will need some time to adjust to the new freedoms and responsibilities that come with college life. Many schools adjust their recommendation regarding first semester academic load based on a student's test scores or high school grades (e.g., Busby, 1998).

Recommendations to students that they begin college with an easy credit load are consistent with the principles underlying a developmental approach to advising (Crookston, 1972; Gordon, 1984; O'Banion, 1972; Winston, Miller, Ender, & Grites, 1984). Since developmental psychology assumes persons naturally progress from simple to more complex challenges, it is appropriate to recommend that students begin with lighter numbers of credits and less difficult courses and, having succeeded at those, to progress to heavier academic loads (Miller & McCaffrey, 1982).

Literature Review

The present research is consistent with several models of college student retention (e.g., Astin, 1984; Pascarella & Terenzini, 1991; Stage 1989; Tinto, 1975, 1993). It can, however, be most easily understood in the context of Tinto's (1993) longitudinal model of institutional departure. Tinto explains the student's decision to continue or depart from the institution as a result of pre-entry attributes, pre-entry goals and commitments, institutional experiences, integration into the institution, and adjusted goals and commitments. Institutional experiences include both academic and social interac-

tions. Particularly appropriate to the present analysis, the model hypothesizes that positive academic experiences would result in increased academic integration, which would result in higher educational intentions, goals, and institutional commitment which, in turn, would result in a decision to continue rather than to depart.

The present research focuses on the relationships between pre-entry attributes, institutional experiences, and outcomes. It does not include direct measures of initial and eventual goals and commitments or institutional integration because none were available. It does, however, give greater attention than most past research to two aspects of academic institutional experience: credit load and course difficulty.

What are the Consequences of Course Difficulty Levels?

Only two studies were located in which the effect of course difficulty was assessed and in neither study was course difficulty a central focus of the investigation. Employing different measures of course difficulty, both studies found that less difficult courses resulted in higher GPAs. Using a sample of college students not limited to first-year students and measuring course difficulty by students' judgment if course work was more difficult than they expected or preferred, Bean and Bradley (1986) found course difficulty to have small negative effects on semester GPA. Using a sample of college seniors and measuring course difficulty by whether a student had taken courses required for engineering or business majors, two reputedly very demanding academic programs at the university where the research was conducted, Pike (1991) found a negative net effect of course difficulty on cumulative GPA.

In the case of course difficulty, therefore, what research is available supports the view that an easier first semester or first year is likely to be a more successful one.

What are the Consequences of Credit Load?

More researchers have examined the effect of credit load on academic outcomes but the results have not supported the expectation that lighter loads result in greater academic success. In fact, most researchers have found not a negative relation between credit load and academic success but rather a significant positive effect. In a study of Saudi students in six different academic departments, Ahmed Shami, Ahmed Abo-Laban, and Ahmed Shami (1980) report that in every department students registered for less than 12 credits had the lowest semester GPAs while students registered for more than 17 credits had the highest GPAs. Suspecting that these results might be affected by the wide range in student credit loads, Zakir Khouz and Ahmed Shami (1982) conducted a replication study at another Saudi university. Only students enrolled for 13 to 18 semester credits were included. Again it was found that students with heavier credit loads tended to earn higher GPAs regardless of the major.

In a study of 219 provisionally admitted beginning college students, Abrams and Jernigan (1984) reported significant positive correlations between the number of credits for which students enrolled in their first term and their first-term GPA, the credit load for their second term and their second-term GPA, and the total credit load over both terms and their two-term overall GPA.

Duby and Schartman (1997) provide compelling evidence from two different regional comprehensive universities that first-semester credit load is a strong positive predictor of first-semester GPA, 12-month retention, and graduation within a 6- to 8-year period. In explaining these results, they offer two suggestions: First, that credit load may impact GPA and retention because credit load represents a student's commitment to academics relative to other time-consuming activities such as work or family and, second, that an advisor's recommendation that a student take a light academic load may be perceived by the student as a judgment about their academic ability and may function as a self-fulfilling prophesy.

Based on a study of juniors and seniors at a research university, Volkwein and Lorang (1996) also report that first-semester credit loads tend to be predictive of later semester credit loads. Volkwein and Lorang maintain that these "extenders," students who are enrolled full-time but take light credit loads and graduate in more than 4 years, represent a substantial and growing proportion of the undergraduate population. Duby and Schartman (1997) also noted that first-semester credit load patterns tend to persist over time. Students who begin with light loads tend to continue with light credit loads.

The literature on the effect of credit load is not entirely consistent, however, nor does it always suggest that the effect of credit load is simple or direct. For example, not all studies have reported a positive relationship between credit load and academic outcomes. Academically weak students participating in a program that allowed them to enroll for less than a full load of credits received grades similar to those received by comparable students

who registered for a full load (Hunziker, 1985). An explaining factor, however, may be that the students who registered for fewer credits were required to participate in academic skills workshops.

The effect of credit load on academic outcomes may depend on other factors. In Stage's (1989) study of first-year college retention, a student's level of academic integration was measured using several indicators, one of which was number of credit hours. Academic integration was a positive predictor of retention for most, but not all, categories of students. Whether academic integration and, presumably, credit load had a positive as opposed to negligible effect on retention depended on a student's primary motivation for attending college. Academically integrated students were more likely to stay in college if they were attending college in order to increase their knowledge or improve their career prospects. Academic integration did not affect retention for students attending college primarily to help improve their communities.

In an early review of college student workload studies from Australia and New Zealand, Gough and Monday (1979) argue against adopting too simplistic an approach toward the effect of workload on outcomes. They point out that a student's ability to manage a particular college workload is a function of background characteristics such as prior achievements, cognitive capacity, entry knowledge, and disposition as well as concurrent characteristics such as attitude, resources, time allocation to task, and perceived importance of the task. They point out that several studies noted considerable variation in the amount of work required of courses carrying the same number of credits and that number of hours of work does not consistently correlate with level of performance.

Which Students Take Lighter or Heavier Credit Loads?

In a community college study (Okun, Weir, Richards, & Benin, 1990), students who reported greater number of hours of employment per week registered for fewer hours than students with few or no weekly hours of employment. Volkwein and Lorang (1996) reported that students with greater numbers of light semesters more frequently dropped courses, reported greater trouble scheduling needed classes, reported greater concern to maximize their GPA or maximize their free time, reported greater family and work responsibilities, and had less social involvement on campus. Looking specifically at first-semester credit load, Duby and Schartman (1997) found the following to be significant positive predictors of credit load at one university: high school GPA, living on campus, nonminority status, family income, and advanced degree aspirations. At the second university they studied they found ACT scores, reported importance of living on campus, clarity of career goals, and high school grades to be significant positive predictors of credit load.

What Will This Study Add?

The present study looks at the effect of both credit load and course difficulty on GPA and retention for both the first semester and the first year of college, controlling for a variety of student background characteristics. It will look at the effect of non-college-credit developmental courses, a pass-fail student success seminar, and course withdrawals in reducing the variability in credit load among beginning college students. It will measure course difficulty by the actual grade distributions in courses. It also tests an interaction model that posits that while weaker students may be more successful when they take lighter loads, stronger students may be more successful when they take heavier academic loads.

Methods

Sample

The research is based on the fall 1996 entering cohort of new college students at Stephen F. Austin State University. These students were registering for courses for the first time at the university and were bringing with them less than 15 hours of transfer credit.

Stephen F. Austin State University is a comprehensive regional university in East Texas. Its total enrollment in the fall of 1996 was 11,690 of which 10,116 were undergraduates. Persons applying to the university for admission as new college students were required to meet one of the following three requirements: graduation from high school in the top half of their graduating class, a cumulative SAT score of 1010 or greater, or a combined ACT score of 21 or greater. The university typically draws one third of its students from the Houston area, one third from the Dallas–Fort Worth area, and one third from other parts of East Texas.

The fall 1996 entering cohort of new college students consisted of 2,047 persons. The cohort was 60% female and 21% minority. Their median SAT score was 1000 and their median ACT score was 21. Their median percentile rank in their high school graduating class was 68. Because of its nonurban setting, relatively few nontraditional age students enroll. In this entering cohort, 93% were age

19 or less at entry into college, and 97% were no older than 24.

Because the calculation of some variables involved considerable data coding and manipulation, the decision was made to work with a sample of the students. From the entering cohort of 2,047 new students, a 25% systematic random sample was selected. This resulted in 512 students. Twenty-three of these students were dropped from the sample since they were not full-time students on the 12th day of the semester, which is the university's official census day. An additional two students were dropped from the sample because they withdrew from all their classes before the end of the semester thereby receiving no grades and, therefore, having no GPA. This left a sample of 487 students.

Variables

All variables were measured using the university's official student database.

First-semester and first-year GPA. These measures use a student's cumulative university GPA calculated on a 0.00 to 4.00 scale. They are based on college-credit letter-graded courses taken at the university. Grades in developmental courses, passed pass/fail courses, and transfer credit are not included just as they are not included in the university's official GPA, which is reported to students and forms the basis for administrative decisions regarding probation, financial aid, honor rolls, and admission into selective programs.

First-semester and first-year retention. First-semester retention indicates whether the student enrolled at the university for a second semester. This was measured by whether the student was enrolled on the census day for the spring semester. One-year retention indicates whether the student returned to the university for a second year. This was measured by whether the student was enrolled on the census day for the fall 1997 semester.

First-semester and first-year credit load. Credit load represents the total number of semester hours for which the student was registered on the census day for a semester. It includes letter-graded college-credit courses, college-credit pass/fail courses, and developmental courses. First-semester credit load is based on semester hours for the fall 1996 semester. First-year credit load is based on the fall 1996 and spring 1997 semesters. Pass/fail and developmental course credits were included in these measures because the university counts these credits in determining tuition and full-time student status.

First-semester and first-year course difficulty. A course's difficulty was measured as the percentage of all students receiving a grade in the course who received either a D or an F. This percentage is based on all grades given in all sections of the course taught during the 1996–97 academic year, and it includes not only grades to first-year students but also to all other students. An individual student's first-semester or first-year course difficulty was calculated by averaging the difficulty of all the college-credit letter-graded courses in which they were enrolled. In calculating that average, the difficulty scores were weighted by the course's number of credit hours so that, for example, the difficulty of a four-credit course weighed twice as heavily as the difficulty of a two-credit course. Grades in pass/fail courses and in developmental courses were not included in these measures because the types of grades and the requirements for attaining particular grades were often significantly different from grade types and requirements in college-credit letter-graded courses and because the university did not include grades from these courses in its own reporting of departmental grade distributions.

In order better to understand the effect of credit load and course difficulty on GPA and retention, a number of control variables were included in the analysis. Age was not controlled for, however, because there was so little variation in age within this cohort of new students.

Female. Women were coded 1 and men 0.

Minority. Students who self-reported themselves as White or Caucasian were coded 0 while students who reported any other racial or ethnic category were coded 1.

Percentile rank in high school graduating class. To take into account the dramatically different size high schools from which students came, their rank in their graduating class was converted into a percentile score that indicates the percentage of their class they outperformed.

Size of high school graduating class. Stephen F. Austin State University is a medium-size educational institution with the inevitable crowds and bureaucracy that large size entails. Adjusting to a larger academic operation usually takes time and is not always successful. Size of the student's high school graduating class was included in the analysis to control for the fact that some incoming students had little previous experience with large schools while others had considerable experience.

SAT score. The analysis takes into account academic ability by considering the highest cumulative SAT score achieved by the student and reported to the university. Students entering the university are required to present either SAT or ACT scores. Most

present SAT scores. For the purposes of this analysis, those only presenting ACT scores were assigned SAT scores based on approximate concordances between the two test scores (Habley, 1995).

College orientation. Attendance at a college summer orientation has been found significantly to affect retention because it increases social integration and institutional commitment (Pascarella, Terenzini, & Wolfle, 1986). In the summer of 1996, the university had six new student orientations. Those students attending one of these orientations received a code of 1 on this variable; those that did not received a code of 0.

First-semester and first-year employment. Okun et al. (1990) reported that student hours of employment per week had a strong negative correlation with the number of credits for which a student registered. As nonacademic commitments increase, it would be expected that time available for academic work and subsequent academic success would decrease (Tinto, 1993). One indicator of competing time commitments that was available from university records was student on-campus employment. The total number of hours students were employed on campus during the first semester and during the first year (fall and spring semesters) was recorded. The university had neither hard individual-level data nor even soft group-level data on the number of hours these students worked off-campus.

Results

Student Background Characteristics

In the sample, 59% are females and 20% are minorities. Students come from high schools with graduating classes as small as 9 and as large as 1,298; the average size was 346. In their graduating high school class, 34% were in the top quartile and 45% were in the second quartile. The average percentile rank in their graduating class was 64. Their SAT scores ranged from 640 to 1380 with a median of 990. All but 11% attended one of the university's summer new-student orientations.

First-Semester Analysis

Only 8.2% of the students were employed on campus during their first semester. Of those who were, the median number of hours worked during the semester was 127. Over the 16-week semester, this averages approximately 8 hours per week.

Credit load. These students registered for 12 to 19 hours during their first semester. Those hours include college-credit pass/fail courses (the university's one-credit student success seminar) and non-college-credit developmental courses. Thirty-six percent of the students were registered for the student success seminar, and 20% were registered for one or more developmental courses. As Table 1 indicates, the average number of total hours for which these students registered was 14.56. That consisted of an average of 13.43 college-credit letter-graded hours, an average of 0.36 college-credit pass/fail hours, and an average of 0.77 non-college-credit developmental hours.

As the correlation matrix in Table 2 indicates, the number of college-credit letter-graded hours and the number of non-college-credit developmental credits show a strong negative correlation. Students with strong high academic ability, as reflected in SAT scores, tend to register for more college-credit hours while students with low academic ability tend to register for more developmental hours. Registration for developmental courses is mandatory for students failing parts of a statewide college basic skills test, which almost all first-year students must take. Few students who pass this test voluntarily choose to enroll in developmental courses. Registration in the university's college-credit pass/fail student success seminar is positively related to attendance at a summer orientation.

The effect of enrollment in developmental courses and the student success seminar is to reduce the variability among students in the total number of hours for which they are registered during their first semester. As evidence of this, compare the standard deviation in Table 1 for total hours and col-

Table 1 Breakdown of first-semester credit load (N = 487 students)

Type of Credit	Mean	Standard Deviation	Minimum	Maximum
Regular course credit (college-credit, letter-graded)	13.43	2.20	3	18
First-year seminar credit (college-credit, pass/fail)	0.36	0.48	0	1
Developmental course credit (non-college credit, letter-graded)	0.77	1.75	0	9
Total credit load	14.56	1.55	12	19

Table 2 Correlation matrix for first-semester analysis

	Female	Minority	Rank in HS	Size of HS	SAT Score	Orient	Work hours
Female	1.0000	–.0204	.3021**	.0021	.1658**	.0390	–.0197
Minority	–.0204	1.0000	–.0423	–.0778	.3108**	.0674	–.0435
Rank in high school	.3021**	–.0423	1.0000	–.3368**	.0639	.0428	.1253**
Size of high school	.0021	–.0778	–.3368**	1.0000	.1207**	.0422	–.0656
SAT Score	–.1658**	–.3108**	.0639	.1207**	1.0000	.0111	.0860
Orientation	.0390	–.0674	.0428	.0422	.0111	1.0000	.0440
Work hours	–.0197	–.0435	.1253**	–.0656	.0860	.0440	1.0000
Credits							
regular	–.0487	–.1238**	.1055*	.1179*	.3226**	.0512	–.0210
pass/fail	.0688	–.1217**	.0177	.1334**	.0771	.2384**	–.0183
develop	.0365	.1835**	–.1050*	–.1497**	–.3611**	–.0016	–.0621
total	–.0066	–.0064	.0380	.0418	.0711	.1446**	–.1053*
Course difficulty	–.0744	.0154	.0147	.0832	.0745	.0075	.0833
Outcomes							
GPA	.1351**	–.1756**	.3180**	.0431	.2668**	.1102**	.0658
returned	.0421	.0503	.0205	.0393	.0116	.0187	.0322

	Regular	Pass/Fail	Develop	Total	Difficulty	GPA	Returned
Female	–.0487	.0688	.0365	–.0066	–.0744	.1351**	.0421
Minority	–.1238**	–.1217**	.1835**	–.0064	.0154	–.1756**	.0503
Rank in high school	.1055*	.0177	–.1050*	.0380	.0147	.3180**	.0205
Size of high school	.1179*	.1334**	–.1497**	.0418	.0832	.0431	.0393
SAT Score	.3226**	.0771	–.3611**	.0711	.0745	.2668**	.0116
Orientation	.0512	.2384**	–.0016	.1446**	.0075	.1102*	.0187
Work hours	–.0210	–.0183	–.0621	–.1053*	.0833	.0658	.0322
Credits							
regular	1.0000	–.0789	–.6986**	.6051**	.0751	.1962**	–.0029
pass/fail	–.0789	1.0000	–.1041*	.0809	.0864	.0801	.0966*
develop	–.6986**	–.1041*	1.0000	.1046*	–.2202**	–.1062*	–.0151
total	.6051**	.0809	.1046*	1.0000	–.1148*	.1831**	.0088
Course difficulty	.0751	.0864	–.2202**	–.1148*	1.0000	–.2449**	–.1000*
Outcomes							
GPA	.1962**	.0801	–.1062*	.1831**	–.2449**	1.0000	.1605**
returned	–.0029	.0966*	–.0151	.0088	–.1000*	.1605**	1.0000

Note. * Two-tailed probability ≤ .05
** Two-tailed probability ≤ .01

lege-credit letter-graded hours. Also note in Table 2 that the background characteristics of students generally correlate less strongly with total hours than with college-credit letter-graded hours. Thus, the effect of developmental courses and the student success seminar, but particularly developmental courses, is to make first-semester students more uniform in their credit load. Students who might normally be taking fewer hours because of actual or perceived academic weaknesses increase their credit load to accommodate these developmental courses and the student success seminar. While adding these courses to their schedule, they do not make a corresponding reduction in the number of college-credit letter-graded credits they take—perhaps because they are reluctant to make only small progress during their first semester toward the total number of college credits they will eventually need to graduate.

These new college students dropped few courses. Although we do not know if they dropped many courses during the first 12 days of the semester, it is clear that most students did not drop any courses after that 12th day, the census day, for the semester. In fact, 78% of these students dropped no classes after the 12th day and 21% dropped just a single course, leaving just 1% who dropped more than one course. University policy permits students to drop

courses up to the middle of the semester with no impact on their GPA. University faculty are strongly encouraged to provide grade feedback to students before mid-semester and almost all faculty do. After mid-semester, students can only withdraw from all their courses and even then may receive grades of WF for withdrew failing, which counts as an F in their GPA.

Course difficulty. Course difficulty is calculated for just the college-credit letter-graded courses. It is based on the percentage of all students who receive grades below C for the course. For the courses in which these students were registered during their first semester, an average of 29% of the students received grades of D or F. At the extremes, one student's schedule put her in classes with an average difficulty of just 9% while another student was in classes with an average difficulty of 43%.

As Table 2 indicates, no student background characteristics are strongly correlated with first-semester course difficulty. It is noteworthy that the difficulty of the courses for which these students registered is not related to their academic ability, prior academic success, or attendance at an orientation. This could very well be a result of students, and possibly advisors, being unaware of what the easy or difficult courses are. While information about the overall grade distributions for entire departments appears in the university's fact book, that reference is rarely examined by most faculty and does not include information about individual courses.

Grade-point average. The average first-semester GPA for these students was 2.01. It ranged, as one would expect, from 0.00 (the GPA for 20 students) to 4.00 (the GPA for 5 students).

Table 3 shows the OLS results of regressing 1-semester GPA on background characteristics, employment record, course hours, and course difficulty. The equation as a whole is significant, accounting for 28% of the variance in 1-semester GPA. High school size, prior academic success, academic ability, course hours, and course difficulty are all significant predictors of first-semester GPA. Students from larger high schools, students with greater prior academic success, and students with more academic ability all tended to earn higher first-semester GPAs. Credit load and course difficulty were both statistically significant. Students who registered for more hours tended to earn higher GPAs while students who registered for more difficult courses tended to earn lower GPAs. Gender, race, orientation attendance, and on-campus employment were not significant.

One-semester retention. Of the students in the sample, 85 reenrolled for the following semester. Table 4 shows the logistic regression results of regressing 1-semester retention on background characteristics, employment record, course hours, course difficulty, and first-semester GPA. It is evident that the variables in the model do a poor job of accounting for 1-semester retention. While the student's first-semester GPA shows some potential, the model as a whole is not significant. The value of *R*-square is only .07 and the percentage of correctly predicted

Table 3 OLS regression of first-semester GPA and first-year GPA

	First-Semester GPA			First-Year GPA		
	b	Standard Error	β	b	Standard Error	β
Female	.1251	.0834	.0644	.0854	.0744	.0532
Minority	–.1809	.0996	–.0759	–.0430	.0875	–.0222
Rank in high school	.0147**	.0021	.3173	.0154**	.0019	.3939
Size of high school	.0005**	.0002	.1231	.0006**	.0002	.1766
SAT score	.0016**	.0003	.2248	.0010**	.0003	.1703
Orientation	.1930	.1283	.0604	.0665	.1170	.0247
Hours worked	.0009	.0008	.0413	.0003	.0003	.0485
Total credit load	.0764**	.0252	.1232	.0674**	.0134	.2222
Course difficulty	–.0441**	.0066	–.2703	–.0248**	.0073	–.1475
(Constant)	–.7042	.5053		–1.4012	.4908	
Cases	465			394		
Adjusted R^2	.2772			.2836		
F-ratio	20.77**			18.27**		

Note. * probability ≤ .05
** probability ≤ .01

cases (not shown in table 4) is absolutely no better based on the model than based on the marginal distribution of the dependent variable. If all we know about beginning students are these background characteristics, their employment record, course hours, course difficulty, and first-semester GPA, then who stays and who leaves after just 1 semester appears to be a nearly random process.

First-Year Analysis

The impact of credit load and course difficulty on first-year academic success is examined for just those 415 students who enrolled for both the fall 1996 and spring 1997 semesters.

For these 415 students, the average number of hours of on-campus employment during their first year was 33. Almost 15% worked on-campus at least sometime during their first year. The proportion of students who worked during the spring semester was considerably higher than the proportion who worked during the fall semester (13.7% in the spring versus 8.0% in the fall). The average number of hours worked in a semester for those who worked rose only slightly in the spring (157 hours in the spring versus 146 hours in the fall).

Credit load. On average, these students registered for a total of 29 hours in the fall and spring semesters combined. These students registered for slightly more hours during their second semester (14.56 versus 14.63), but the difference is slight and not statistically significant ($t = -.68$; $p = .50$). Indeed, one might have expected a sharper increase in hours if these students were following the recommendation to start easy and then take on progressively greater tasks. Perhaps, for many of them, the first semester was a sobering experience.

During their second semester, students took fewer developmental courses and did not take the student success seminar. Both of these changes are expected since many students met the state and university developmental requirements after just 1 semester, and the student success seminar is a 1-semester program aimed at the first semester of college. During the spring semester, dropping courses became only slightly more common. It was still the case that the vast majority of students (76%) during the spring semester dropped no courses after the 12th day of the semester.

In general, credit load patterns persisted from the first semester to the second. Students who registered for more hours during their first semester were the students who registered for more hours during the second semester ($r = .25$; $p < .01$). Students who registered for developmental courses during the first semester were the students who registered for developmental courses during the second semester ($r = .29$; $p < .01$). One exception, however, is dropping courses. The correlation between number of

Table 4 Logistic regression of first-semester retention and first-year retention

	First-Semester Retention			First-Year Retention		
	B	Standard Error	Odds Ratio	B	Standard Error	Odds Ratio
Female	.0577	.2925	1.0594	–.0078	.2705	.9923
Minority	.6537	.3792	1.9226	.5354	.3271	1.7081
Rank in HS	–.0012	.0077	.9988	–.0019	.0075	.9981
Size of HS	.0006	.0007	1.0006	–.0001	.0006	.9999
SAT score	–.0001	.0011	1.000	–.0017	.0010	.9983
Orientation	.3063	.4165	1.3584	.0033	.4085	1.0033
Hours worked	.0025	.0035	1.0025	.0004	.0012	1.0004
Total credit load	–.0543	.0889	.9471	.0743	.0508	1.0771
Course difficulty	–.0407	.0255	.9601	–.0588*	.0287	.9429
GPA	.4332**	.1608	1.5422	1.3055**	.2047	3.6896
(Constant)	2.3107	1.8114		–.7131	1.8151	
cases	465			394		
–2 log likelihood	379.211			402.371		
chi-square	18.219			82.002**		
df	10			10		
Nagelkerke R^2	.067			.266		

Note. * Probability ≤ .05
** Probability ≤ .01

hours dropped in the first semester and number of hours dropped in the second semester is small and nonsignificant ($r = .04$; $p = .36$).

Course difficulty. Students register for slightly easier courses during their second semester. During their fall semester these 415 students registered for courses with an average difficulty (failure rate) of 28.8%. In the spring, their courses had an average failure rate of 26.8%. This difference, although small, is statistically significant ($t = 6.21$; $p < .01$). The decline in difficulty may represent a "wising up" of students in course selection, but it may also represent an artifact of the way course difficulty is measured. Several general education courses that are taken by first-year students (e.g., in science, math, and composition) are sequenced so that the second course in the sequence appears to be less difficult, as indicated by a lower failure rate, than the first course, but this is because failure in the first course prevents weaker students from being able to register for the second course.

Students who registered for more difficult courses in the first semester were more likely to register for more difficult courses in the second semester ($r = .32$; $p < .01$). This may be a result of students' majors, with some majors requiring consistently more difficult courses than others. Whatever the reason, it is evidence that course difficulty patterns, like credit load patterns, established in the first semester tend to persist through at least the second semester.

Grade-point average. In terms of GPA, the second semester was generally better than the first. After one semester, these 415 students had an average GPA of 2.08. By the end of their second semester, their average cumulative GPA had risen to a 2.18. Four students still had cumulative GPAs of 0.00 and four still had cumulative GPAs of 4.00.

The second column of Table 3 shows the OLS results of regressing 1-year GPA on background characteristics, employment record, course hours, and course difficulty. The results closely mirror the 1-semester results. The equation as a whole is again significant, accounting for 28% of the variance in 1-year GPA. The same independent variables—high school size, prior academic success, academic ability, course hours, and course difficulty—are significant. Gender, race, orientation attendance, and on-campus employment again are not significant.

One-year retention. Of the students who returned in the spring for their second semester, 69% would be back the next fall to begin their second year at the university. Of the original sample of 487 students who began in the fall of 1996, the 12-month retention rate was 60%.

The second column of Table 4 shows the logistic regression analysis of 1-year retention. The model does much better in predicting 1-year retention than it did in predicting 1-semester retention. The overall model is significant, the *R*-square rises to .27, and the percentage of correctly predicted cases increases from 69% (based on just the marginal distribution of 1-year retention) to 79% (based on the variables in the model).

A student's GPA after 2 semesters is clearly significant in explaining retention. Net of other factors, students with higher cumulative GPAs after the spring semester are much more likely to return the next fall. Course difficulty is also significant in this analysis of 1-year retention. Net of other factors, including grades received, students in more difficult courses are less likely to return for a second year. Keeping in mind that these same variables did not significantly account for 1-semester retention, students may attribute 1 semester of poor grades or difficult course work to chance or the transition to a new school, but an entire year of poor grades or difficult courses may lead them to reevaluate their college choice. It is also the case, of course, that after 2 semesters of poor grades the choice for some students of whether to return or not is made for them because they find themselves on academic suspension.

High school rank and credit load also affect 1-year retention, but they work through GPA. In a logistic regression model (results not shown) in which GPA is not included, the effect of high school rank and credit load both increase and become statistically significant. The effect of course difficulty also increases in such a model, which indicates that some of the effect of course difficulty on retention is also mediated through GPA.

It is noteworthy that in the logistic regressions of both 1-semester and 1-year retention, minority status comes close to statistical significance, and its effect is positive. This may indicate a particularly strong support network for minorities on campus or greater minority resistance to discouragement (minority students received significantly lower grades than nonminority students). This positive minority effect deserves further investigation.

Possible Interaction Effects

The pattern thus far revealed indicates that students who take more courses and students who take easier courses tend to be more successful. One last statistical technique was employed to

search for evidence that, at least for some students, lighter credit loads or more difficult courses might result in greater academic success. Since prior academic success, operationalized as rank in high school graduating class, was the best predictor of both 1-semester and 1-year GPA, it was included in a series of two-way ANOVAs with credit load and course difficulty in a search for possible interaction effects. Might students who had limited prior academic success do better in college if they took fewer hours? Might students with greater academic success actually be more successful in college if they were challenged by more difficult courses?

To investigate this possibility, high school graduating class rank was collapsed into just three categories: top quartile of their graduating class, second quartile, and bottom half. Credit load was also collapsed into three categories. For first-semester credit load, the categories were 12 or 13 hours, 14 or 15 hours, and 16 or more hours. For first-year credit load, the categories were up to 26 hours, 27 to 30 hours, and 31 or more hours. Course difficulty was collapsed into three categories: students who took courses with average failure rates of less that 25%, average failure rates of 25 to 30%, and average failure rates of 30% or higher. These categories for course difficulty were used for both 1-semester and 1-year course difficulty.

A total of eight separate ANOVA were run (results not shown). The models differed by dependent variable (first-semester GPA, first-semester retention, first-year GPA, and first-year retention) and whether credit load or course difficulty was included. High school graduating class quartile was always included. In not one model was there a significant interaction effect. An examination of the subgroup means reveals that students in all quartiles of their high school graduating class tend to be more successful (i.e., have higher GPAs and greater retention) if they take more hours and if they take easier courses. No consistent evidence was found to support the claim that students with limited prior academic success (but who nevertheless meet the university's admissions requirements) should take lighter numbers of hours or that students who excelled in high school will in fact do better if they take more difficult first-semester or first-year courses.

Discussion

The research problem examined here can be understood in the context of Tinto's (1993) model of institutional retention. As stated earlier, however, only certain parts of that model are actually measured in the present research. No data on initial student goals and commitments, college social interaction, informal faculty interaction, academic and social integration, or adjusted goals and commitment were available. Thus, we are seeing an important part of the process of institutional retention but not all of it. Certainly, information on these other variables would enable us to account for more of the variation in GPAs and retention and would enable us to speak with more certainty about the intervening process by which academic load factors come to influence GPA and retention outcomes. Despite these limitations, important conclusions can be drawn about the determinants of academic outcomes, and reasonable conjectures about intervening student attitudes, goals, and commitments can be made.

This study found that enrollment in required development courses along with enrollment in the student success seminar results in reduced variation in credit load during the first year and, particularly, during the first semester. Students with stronger academic backgrounds tend to enroll for more college-credit hours, but students with weaker academic backgrounds tend to register for more development hours. This results in strong and weak student students taking more similar total credit loads.

Second semester credit loads were essentially the same as first semester credit loads. There was no evidence that students typically enrolled for a heavier load during their second semester.

These first-year students dropped very few courses between the 12th day of the semester, the official census day, and mid-semester, the last day to drop courses without an impact on the GPA. This is interesting since many of them were headed toward failing grades in several courses and probably had indications of difficulty before mid-semester. This reluctance to drop courses may reflect a lack of familiarity with university procedures and opportunities; it may reflect a naive optimism that they will be able to turn their grades around during the second half of the semester; or it may reflect a reluctance to drop below 12 hour credit loads for reasons of financial aid or on-campus housing eligibility. In fact, both the university's financial aid and on-campus housing requirements do permit students to occasionally drop below 12 hour credit loads, but students may not always understand this.

The background characteristics of students do not correlate well with the difficulty level of the courses for which they register during their first and second semesters. While course difficulty may be related to the student's chosen major, these students are not choosing majors or being guided toward general

education courses that correspond to their academic ability or prior academic success.

Students do register for slightly less difficult courses during their second semester. This may reflect a greater knowledge about what are the tough courses (acquired through the student grapevine), changes of major into easier programs, or the fact that some second-semester courses have prerequisites that screen out weaker students thus giving the course the appearance of being easier because the grade distribution is higher. In any case, there is little evidence that the developmental advising guideline of progressing from less difficult to more difficult courses is being followed.

In accounting for both first-semester and first-year GPAs, the same set of independent variables are significant. Students from larger high schools, students with greater prior academic success, and students with more academic ability all tended to earn higher first-semester GPAs. Credit load and course difficulty were both statistically significant. Students who registered for more hours tended to earn higher GPAs while students who registered for more difficult courses tended to earn lower GPAs. Gender, race, orientation, and on-campus employment were not significant.

In accounting for 1-year retention, a student's GPA appears to be the dominant factor. The only other variable to have a significant direct effect on 1-year retention was course difficulty. Almost all of the effect on retention of background characteristics and credit load as well as some of the effect of course difficulty works through GPA. While the model was significant in accounting for 1-semester retention, these same variables failed to significantly account for 1-semester retention. While the first semester's difficulties may be judged to be tolerable and attributable to the transition to college, 2 semesters of difficult courses or poor grades may tire or discourage the student to the point that they leave the institution. Of course, students are traditionally more likely to change institutions after the spring semester than after the fall, and it is only after 2 semesters that some students find themselves on academic suspension.

No significant interaction effects on first-year academic success between a student's prior academic success and their academic workload were found. The effects of high school graduating class rank, first-semester and first-year credit load, and first-semester and first-year course difficulty appear to be relatively straightforward. In no case was GPA or retention positively affected at a significant level by stronger students taking more difficult courses or weaker students taking a lighter credit load.

What can we say then about the effect of academic load, as indicated by credit load and course difficulty, on the success of first-year college students? Both matter. Both directly affect GPA outcomes and, because they affect GPA, indirectly affect retention. Course difficulty also has a direct effect on retention.

Controlling for a variety of student characteristics including academic ability, prior academic success, and concurrent employment commitments, students who take heavier credit loads earn higher GPAs. This confirms and advances the work of Ahmed Shami et al. (1980), Zakir Khouz and Ahmed Shami (1982), Abrams and Jernigan (1984), Stage (1989), and Duby and Schartman (1997).

Using a more sophisticated measure of course difficulty, this analysis confirms Bean and Bradley's (1986) and Pike's (1991) observations that increased course difficulty levels result in lower GPAs. It further found that course difficulty levels have a separate negative effect on retention.

The effects of credit load and course difficulty level on GPA and retention do not significantly vary by student's level of prior academic success. Previous research had not explicitly considered the possibility of such an interaction.

Practically speaking, these results indicate that many beginning college students are being given at least partially incorrect advice. If students wish to maximize their GPA and increase their probability of retention, they should be taking heavier first-semester and first-year credit loads. The data in this study do not explain why this is so although possible reasons are that heavier credit loads may force students to manage their time more effectively or acknowledge that academics is a full-time job. In turn, coming to terms with time management or recognizing that academics is a top priority may result in not just coping with a few more credits but may result in raising their overall level of academic performance.

Interestingly, however, finding themselves in more difficult courses does not have a similar effect. More difficult courses apparently do not result in a similar epiphany that time must be managed or that academics must be given priority. If anything, more difficult courses may discourage rather than challenge students.

If this is so, advisors should not only encourage students to register for more credits but they must also do a better job of placing students in more difficulty level-appropriate courses. For example, rather than encouraging all entering students to

attempt college algebra or botany, it makes more sense to determine a student's initial ability level and place him or her in a more appropriate course.

A final recommendation to students, advisors, and parents may be to more frequently exercise the option to drop courses. When students find themselves in clearly overwhelming courses, they need to withdraw before they fail. It may be that advisors and parents have gone too far in discouraging flagrant dropping of courses. After all, the students in this sample dropped very few courses. Perhaps it is time to judiciously encourage withdrawal from courses in which students stand little chance of success.

Of course, the objection could be raised that this paper uses too narrow a definition of student success. What about knowledge gained regardless of grade received? What about the worthwhile realization that academics is hard work and slipshod performance will not be rewarded? While a case might be made that a disastrous first year in college is a very effective learning experience, the benefit of such a learning experience must be seriously questioned if it results in the termination of a college education.

Others might object that the advice listed above will result in students never attempting challenging courses. Indeed, a worthwhile question for future research is to track the course difficulty histories of students beyond their first year. Do students who experience initial college success attempt progressively harder courses in later years? It is not clear that they do. But if students who take less challenging courses initially and experience initial success then continue to seek out less challenging courses, that may simply represent a failure on our advising procedures rather than an inevitable consequence of beginning with a heavy load of light courses.

Finally, one other area of further study should be suggested. The question of why light-credit-load students do poorly needs to be further investigated. It was suggested above that students with light credit loads may not be forced to manage their time or confront the fact that academics should be a top priority. However, that needs to be directly tested and other alternatives need to be considered. While this study controlled for on-campus employment, off-campus employment, time spent with student organizations, athletics, family, and commuting were not (although for this university almost all first-year students live on campus, almost all are not married, and only a small proportion participate in intercollegiate athletics). The clarity of a student's college and career goals were not assessed. It may be that more goal-directed students take more courses and do better not because of their credit load but because of their desire to get through college and make progress toward their ultimate goals.

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