Longitudinal Study of Student Dropout From a Business School

WILEY M. MANGUM
DAN BAUGHER
JANICE K. WINCH
ANDREW VARANELLI
Pace University
New York, New York

ABSTRACT. In this study, the authors identified variables that predict college student dropout from a business school. In the 1st phase of the study, they collected information from students ($N = 403$) in the 2nd semester of their freshman year. Then they collected dropout data from the same students 4 semesters after the first phase. The authors used point-biserial correlations to determine the relationship of each independent variable to dropout. Three factors showed a significant correlation with future dropout: 1st-semester GPA, 1st-semester average course evaluation, and perception of financial difficulties.

A ttracting and retaining students suited to a university's mission have always been critical issues. Historically, a number of researchers have offered bleak predictions regarding student attrition (Downey, Reed, Lynch, & Hoyt, 1980; Newlon & Gaither, 1980). According to Newlon and Gaither, the student dropout rate over a 4-year period has been said to range from 12% to 82%, with an average of 45%, while remaining stable within institutions. There has been little suggestion of much change since then.

Student attrition is costly for universities. Not only do they lose substantial sums of money invested in attracting students, but they also lose the time and energy invested in teaching, counseling, record maintenance, housing, and other forms of effort in accommodating students. Dropout, as a general financial factor, can have a considerable impact on tuition rate, because students who drop out are an opportunity loss, particularly for private universities. This loss (Hoverstad, Sylvester, & Voss, 2001) must be made up in some way, often by increasing tuitions, because many costs are fixed. Dropping out is costly for the student as well. In addition to lost earning potential and immediate out-of-pocket expenses, students experience a psychological setback.

College student attrition has been widely discussed. In his book on student retention and dropout, Astin (1975) cited a number of variables that contribute to dropout, including poor teaching, financial difficulties, dissatisfaction with requirements or regulations, change in career goals, and poor grades. Tinto (1982) agreed with Astin, especially with regard to financial difficulties. Tinto suggested a number of variables related to organizational commitment (1987) and faculty skills (1975). Tinto (1975) hypothesized that a higher degree of social and academic integration into the institutional environment would lead to lower dropout rates.

Tinto's student integration model (1975) has received general empirical support (Munro, 1981; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1980). Braxton, Vesper, and Hossler (1995) extended this model by adding the effects of students' expectations regarding the institution. They found that the degree to which the expectations were met in academic and career development had indirect effects on intent to return. Ishtani and DesJardins (2002) included measures of academic and social integration in their longitudinal study of college students in the United States.

The variables suggested by Astin (1975) and Tinto (1975) have been used in many empirical studies. Using path analysis, Braxton, Bray, and Berger (2000) found that student perceptions of faculty teaching skills did appear to be precursors of student persistence. Also, financial aid was found to affect dropout behavior (DesJardins, Ahlburg, & McCall, 1999; Hochstein & Butler, 1983) significantly. For example, Hochstein and Butler found that grants, rather than loans, had a positive effect on student retention. Pascarella and Chapman (1983) found that 1st-year GPA also was positively related to retention.

Astin (1997), in a longitudinal study based on national survey data, developed a multiple regression model for predicting institutional retention rate based on high school grades, SAT scores, gender, and race. Bean (1983) adopted Price and Mueller's (1981) employee turnover

model to study dropout rates of freshman women at a university. Among the significant determinants of dropout, he found the following two variables, which he translated from Price and Mueller's model: practical value of one's education (surrogate measure for pay) and opportunity to transfer to another college (corresponding to opportunity to obtain another job).

Because of the results of existing empirical studies, some authors have recommended institutional actions to increase student retention. These authors include Braxton and McClendon (2001), Braxton and Mundy (2001), and Berger (2001). Berger, in particular, used a framework of organizational behavior to suggest that institutions (a) provide a collegial environment with shared meaning and clear lines of communications and (b) effectively build connections with external constituencies such as future employers and graduating students.

In this study, we investigated a number of variables that have been suggested as possible factors in student dropout. Many studies of student dropout have focused on a smaller percentage of the population responding to all questions. Often, only those individuals who actually have dropped out are considered in these studies. However, the results of the current study were based on information collected from close to 90% of the student population at a business school long before dropout occurred. In that sense, our study may be thought of as predictive. It is longitudinal in that we followed the respondents for 4 semesters after they responded initially to questions related to dropout. Although we focused on business school students, we believe that the factors would not differ for students in other disciplines.

Method

Using previous studies in the field and our own observations over the years, we developed a set of instruments for surveying students with respect to information that we thought might be predictive of future dropout. To predict the dependent variable of student dropout, we used answers to specific questions and averages in other cases as independent variables.

We investigated the following seven potential predictors of dropout:

1. Satisfaction with rules and regulations
2. Satisfaction with ability to obtain desired courses or curriculum
3. Perception of likelihood of completing current semester
4. Perception of likelihood of completing college
5. Perception of financial difficulties
6. Average student evaluation of all 1st-semester courses
7. First-semester grade-point average

We hypothesized that increased difficulty with any of these variables would be related to dropout.

The sample consisted of full-time, freshman students in a business school of a large private university in New York City. We asked the students to complete the survey instruments during their 2nd semester while they were taking one of the required core courses in accounting. This provided access to all new students in the business school. We administered the instruments in 30 accounting classes during the semester. A total of 461 students were available in the accounting classes, and 403 students participated, resulting in an 87% completion rate. We followed the same 403 students for 4 semesters to determine if any would drop out. A total of 79 of the 403 students participating dropped out, resulting in a dropout rate of close to 20%.

The students completed two instruments. The first instrument comprised five questions that corresponded to the first five independent variables. Specifically, they asked students to rate the following factors: (a) their satisfaction with the university's requirements and regulations, (b) their satisfaction with their ability to take desired courses or curriculum, (c) their perception of the likelihood of their completing the current semester, (d) their perception of the likelihood of their completing college, and (e) their perception of their encountering financial difficulties. The students used a 10-point rating scale in which a higher rating indicated less of a problem.

We designed the second instrument to obtain feedback from students regarding their perception of the effectiveness of the courses that they took during the 1st semester. Each student was asked to fill out a course evaluation form for every course that he or she took during the 1st semester. For all the items on the course evaluation form, the students used a 5-point Likert-type scale ranging from 1 (low) to 5 (high). Many of the ratings on this instrument targeted student views of faculty effectiveness in each course. The form included 16 questions covering teaching and course environment factors such as faculty sensitivity to students' feelings and problems, students' feelings about how free they were to ask questions, the usefulness of readings, whether the workload equaled the benefits, their overall rating of the course, and their overall rating of the instructor.

Although it was possible to statistically analyze each of the 16 questions on the course evaluation form separately, we determined that the questions were sufficiently intercorrelated to allow for an average score across the 16 items as a measure of course effectiveness. Given the goals of our study, we also decided that it would be just as effective to use the average score across all courses taken by the students during their 1st semester as it would be to analyze each course on an individual basis. Thus, the student course evaluation measure used for this study was the average score or rating assigned to all 16 questions for all the courses taken by the students during their 1st semester. Most of the students took five courses during the 1st semester. For most students, the time that had elapsed between the end of the 1st semester and their completion of the course evaluation was approximately 4 to 5 weeks. We collected the data for the last independent variable—the 1st-semester grade-point averages of the students—from college records when the students completed the survey instruments.

We determined the dependent variable, dropout, 4 semesters later by examining college records of those students who participated in the first phase of the study. We assigned a score of 0 to those students who dropped out and a score of 1 to those who were still enrolled.

Results

To assess the potential importance of

each variable for predicting dropout, we used the point-biserial correlation (r_{pb}) because the dependent variable was dichotomous and the predictors were continuous variables (see McNemar, 1966, pp. 192–193 for further details). The highest score possible for this statistic is somewhat affected by the distribution of both the continuous independent variable and the dichotomous, dependent variable. This is important to note because the point-biserial correlation should not be considered identical

ter courses, and perception of financial difficulties. Difficulties in these three areas were related to dropout. The remaining 4 showed no significant relationship to dropout. The significant correlations ranged from .253 to .098. The nonsignificant correlations ranged from .073 to .012.

Discussion

In this article, we do not suggest predictors of student dropout from a busi-

ascertain predictors of dropout from exit interviews or data collected just before or even after the actual dropout has taken place (see, e.g., Aldridge & Rowley, 2001; Johnson, 1994; Tom, 1999). The major value of this type of longitudinal study lies in its ability to link the future dropout of a student to information collected long before the occurrence of the actual dropout. Hence, the predictors of future dropout identified in this study and assessed very early in a student's academic career may provide more clear and effective paths for intervention than predictors identified at or near the time of dropout.

In fact, the three significant predictors in this study do suggest some potential early interventions that can help the university reduce its dropout rate. A system could be developed for early identification and care of students who are having difficulties with one or more of the three measures. In the case of GPA and financial difficulties, the university might provide counselors to help students seek other funds or faculty members who would serve as mentors to help students perform better. For student evaluations, the university would need to collect confidential data (not anonymous) for tracking purposes. Institutional approaches can solve the problem of low student evaluations.

To reduce the dropouts related to student evaluations of courses, today's universities commonly rely on two approaches: improving the teaching effectiveness of faculty members and modifying the curriculum to make it

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in range to that of the more commonly used Pearson correlation.

Generally speaking, it is not possible to obtain a perfect correlation of 1.0 for a dichotomous variable and a continuous variable. The maximum size of r_{pb} between a dichotomous variable and a normally distributed variable is about .80, which occurs when the ratio of the dichotomous variable score is 50:50. When the ratio for the dichotomous variable departs from 50:50, the maximum possible score declines somewhat. In this study, the dichotomous variable had a ratio of 20:80, which suggests a maximum of .70 for any point-biserial correlation assessed in the study (see Nunnally, 1978, pp. 145–146 for further details). Although this limitation in the upper range of a point-biserial correlation is important for understanding the results of this study, it did not affect the statistical significance of the results.

In Table 1, we summarize the point-biserial correlations for all variables considered in this study. Of the 7 variables assessed for their relationship to dropout with the point-biserial correlation, 3 showed a significant correlation with future dropout ($p < .05$). These variables were 1st-semester GPA, average student evaluation of all 1st-semes-

ness school or university that have not been discussed previously. However, given the very high participation rate at the outset of our study, our results do add a greater measure of confidence to the potential impact and validity of these variables.

Moreover, this study was longitudinal in nature because we followed the same group of students for 4 semesters to focus on how these potential predictors may be related to actual dropout at a future date. Thus, it differs from "autopsy" studies, in which investigators try to

TABLE 1. Point-Biserial Correlations With Dropout for Potential Predictors of Dropout

Variable	Point-biserial correlation	Significance (p)
1st-semester GPA	.253	.005
Average student evaluation of 1st-semester courses	.117	.01
Perception of financial difficulties	.098	.025
Perception of completing college	.073	*ns*
Perception of completing current semester	.065	*ns*
Satisfaction with rules and regulations	.058	*ns*
Satisfaction with ability to get desired courses or curriculum	.012	*ns*

Note. ns indicates nonsignificant point-biserial correlation; $N = 403$.

more interesting. Although such interventions may be beneficial, they assume a degree of causality that no correlational study can ensure. Another approach that has been largely overlooked is that of helping students gain more realistic perceptions of faculty teaching styles and of how those differing styles can lead to a stronger education. Students may benefit from adjusting their expectations so that they understand that a faculty member who has important things to convey may not always seem to be the most interesting teacher.

Because beginning one's studies at a university involves some of the characteristics of taking on a new job, some of the factors involving realistic expectations that tend to reduce employee turnover may also be worth investigating. For example, researchers have demonstrated that overemphasizing positive or minimizing negative attributes of a job may lead to subsequent problems such as dissatisfaction, absenteeism, and turnover, owing to unmet goals and expectations among employees (Lee, Ashford, Walsh, & Mowday, 1992). By reducing unrealistic expectations, new employees can better handle difficulties that may arise in their new job situations (Fedor, Buckley, & Davis, 1997). Such an approach may also be useful for influencing the subsequent attitudes and behaviors of newcomers (Allen & Meyer, 1990). The student-as-employee idea also has been supported by Halbesleben, Becker, and Buckley (2003). Halbesleben et al. stated that students should be taught that they, not the instructor, are ultimately accountable for their education and that they must contribute the labor necessary for using the resources (such as instructor) provided by the university.

Conclusion

In this study, we offered the possibility of early intervention as a means of reducing dropout. The longitudinal nature and the high participation rate in this study add validity to the three variables found to have a significant relationship to dropout. These variables are particularly important because they lend themselves to early intervention and have a long history as areas of concern to experts in the field. We also believe that expectations are a key to satisfaction, turnover, and dropout and are worth considering in any intervention to reduce student dropout or in experimental research on the topic.

REFERENCES

Aldridge, S., & Rowley, J. (2001). Conducting a withdrawal survey. *Quality in Higher Education, 7*(1), 55–63.

Allen, N., & Meyer, J. (1990). Organizational socialization tactics: A longitudinal analysis of links to newcomers' commitment and role orientation. *Academy of Management Journal, 33,* 847–858.

Astin, A. W. (1975). *Preventing students from dropping out.* San Francisco: Jossey-Bass.

Astin, A. W. (1997). How "good" is your institution's retention rate? *Research in Higher Education, 38*(6), 647–659.

Bean, J. (1983). The application of model turnover in work organizations to the student attrition process. *Review of Higher Education, 6*(2), 129–148.

Berger, J. (2001). Understanding the organizational nature of student persistence: Empirically-based recommendations for practice. *Journal of College Student Retention, 3*(1), 3–21.

Braxton, J. M., Bray, N., & Berger, J. (2000). Faculty teaching skills and their influence on the college student departure. *Journal of College Student Development, 41*(2), 215–227.

Braxton, J. M., & McClendon, S. A. (2001). The fostering of social integration and retention through institutional practice. *Journal of College Student Retention, 3*(1), 57–71.

Braxton, J. M., & Mundy, M. E. (2001). Powerful institutional levers to reduce college student departure. *Journal of College Student Retention, 3*(1), 91–118.

Braxton, J. M., Vesper, N., & Hossler, D. (1995). Expectations for college and student persistence. *Research in Higher Education, 36*(5), 595–612.

DesJardins, S. L., Ahlburg, D. A., & McCall, B. P. (1999). An event history model of student departure. *Economics of Education Review, 18*(3), 375–390.

Downey, R., Reed, J., Lynch, M., & Hoyt, D. (1980). Factors relevant to dropout. *Measurement and Evaluation in Guidance, 13*(3), 158–168.

Fedor, D., Buckley, M., & Davis, W. (1997). A model of the effects of realistic job previews. *International Journal of Management, 14,* 211–221.

Halbesleben, J. R., Becker, J. A., & Buckley, M. R. (2003). Considering the labor contributions of students: An alternative to the student-as-customer metaphor. *Journal of Education for Business, 78*(5), 255–257.

Hochstein, S. K., & Butler, R. R. (1983). The effects of the composition of a financial aid package on student retention. *Journal of Student Financial Aid, 13*(1), 21–27.

Hoverstad, R., Sylvester, R., & Voss, K. E. (2001). The expected monetary value of a student: A model and example. *Journal of Marketing for Higher Education, 10*(4), 51–62.

Ishtani, T., & DesJardins, S. (2002). A longitudinal investigation of dropout from college in the United States. *Journal of College Student Retention, 4*(2), 173–201.

Johnson, G. M. (1994). Undergraduate student attrition: A comparison of the characteristics of students who withdraw and students who persist. *Alberta Journal of Educational Research, 40*(3), 337–353.

Lee, T., Ashford, S., Walsh, J., & Mowday, R. (1992). Commitment propensity, organizational commitment, and voluntary turnover: A longitudinal study of organizational entry processes. *Journal of Management, 18,* 15–34.

McNemar, Q. (1966). *Psychological statistics.* New York: Wiley.

Munro, B. (1981). Dropouts from higher education: Path analysis of a national sample. *American Educational Research Journal, 81,* 133–141.

Newlon, L. L., & Gaither, G. H. (1980). Factors contributing to attrition: An analysis of program impact on persistence patterns. *College and University, 55,* 237–251.

Nunnally, J. (1978). *Psychometric theory.* New York: McGraw-Hill.

Pascarella, E. T., & Chapman, D. W. (1983). A multi-institutional path analytic validation of Tinto's model of college withdrawal. *American Educational Research Journal, 20,* 87–102.

Pascarella, E. T., & Terenzini, P. T. (1980). Predicting persistence and voluntary dropout decisions from a theoretical model. *Journal of Higher Education, 51,* 60–75.

Price, J. L., & Mueller, C. W. (1981). A causal model of turnover for nurses. *Academy of Management Journal, 24,* 543–565.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45,* 89–125.

Tinto, V. (1982). Limits of theory and practice in student attrition. *Journal of Higher Education, 53*(6), 687–703.

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition.* Chicago: University of Chicago Press.

Tom, G. (1999). A post-mortem study of student attrition at the college of business administration. *Journal of College Student Retention, 1*(3), 267–287.