Help-Seeking Behavior and Predictions of Retention

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Abstract – This paper uses help-seeking indicators to predict students' retention. Many community colleges (as part of the initial enrollment process) ask students if they need help in various areas. These indicators can be used to conduct student outreach and develop support activities. After controlling for demographic variations and academic preparation, we found that students more willing to ask for assistance on this initial questionnaire were more likely to be retained to the next semester. Help-seeking was also positively associated with other related longer-term retention predictors, such as grade point average and first semester credits earned.

Introduction

Community colleges have been seeking better retention predictors for students in their initial semester of college enrollment. While GPA, credits earned, developmental work progress, late registration, and course withdrawals provide good predictors for later semesters, available data for entering students is scarce. High school GPA and even developmental test scores are not very good predictors of retention to the second semester, especially when compared with the accuracy of student-level information in later semesters.

We have also found at LaGuardia that women are retained more strongly than men in the first semester, but those men who attend orientation sessions are retained at the same (high) level as the women who attend orientation, and those men who do not attend orientation are retained at the same (low) level as those women who do not (Dickmeyer 2012). Notably, women are also much more likely to avail themselves of the orientation experience. Is this because women are more likely to seek help compared with men?

Help-seeking is often assumed to be a characteristic of students with "resilience" and associated with retention and other success indicators. Nevertheless, the evidence is weak that help-seeking is a necessary characteristic of successful students early in their academic careers. Before moving the college toward addressing this apparent deficiency, we are looking for evidence that help-seeking can be measured as a behavior and that it actually predicts early retention. Indeed, the college has recently issued a report calling for the addition of several new competencies that are beyond those related to academic work like critical literacy and quantitative reasoning, including one for problem solving. Help seeking behavior may be seen as one of the initial components of problem solving.

Previous literature on students' help-seeking practices

Lower levels of academic preparation and "non-traditional" backgrounds are often cited for community college student failure (Grubb 1996; Tannock and Flocks 2003; Johnson et al. 2009). Only 36% of students in community college associate's degree programs graduate within six years (Bailey et al. 2006). There have been many studies of baccalaureate degree students (Bailey and Alfonso 2005) in their first and second years based on Tinto's (1975, 1986, 1987, 1998) influential work on academic and social integration, but studies of community college students provide mixed results (Vorhees 1987; Bers and Smith 1991; Pascarella and Chapman 1983).

A handful of researchers have attempted to distinguish the characteristics of "non-traditional" students in terms of traits that might be associated with lower levels of student persistence, including problem-solving skills and attitudes. Rose notes that non-traditional students are not "socialized" to feel

comfortable seeking help (Rose 2012). Several authors have noted that help-seeking behaviors and social problem-solving skills are adaptive traits (Nelson-LeGall and Jones 1991) and critical elements of "college readiness" (Conley 2007; Roderick et al. 2009). Other authors have sought to relate help-seeking to the types of help being sought (Hargrove and Sedlacek 1995; DeRicco 1998) and achievement-related rather than a dependent behavior (Karabenick and Knapp 1991).

Research question and hypothesis

This study explores whether help seeking behavior is associated with a greater rate of positive academic progress, in particular, increased retention and academic performance. Our research hypothesis is that students who seek help before admissions are more likely to be retained after one and two semesters, controlling for actual specific help needs and gender.

Although the college asks the 85% of entering students who are not math exempt whether they would like help in basic skills areas, the college has never used this information to provide extra assistance to these students. We believe that the college could refine these questions to identify students who have not learned the value of help-seeking, raise their competency in this area, and improve retention. The proposed research will be necessary, however, to move this decision forward.

Research Design

Before entering the college, all students are evaluated for their academic preparation. Students who are not exempt from math (SAT scores are not required, but are used, if submitted, for exemption) must take a math placement test. Only 15% of entering students are exempted in this manner. The City University of New York (CUNY) System has added questions to this test for general background on students. Several of the questions ask whether students need help in various areas. Unfortunately, the CUNY System does not immediately make the results of this survey readily available to the system campuses. This has meant that the college was not able to use the results of these questions to offer help to students requesting it. While this is a process failure, it creates a natural experiment and a research opportunity, comparing the performance of students with different help-seeking patterns.

The basic question was: "Would you like help with any of the following items? (Y=yes, M=Maybe, N=No)." From the list of support areas we chose five that would allow us to most easily control for actual need for help and that would not be universally answered one way: Health Problems, Learning English, Reading skills, Writing skills, and Personal concerns. We eliminated some questions because the audience was too limited, like help with day care and veterans' benefits. On the other hand, we also eliminated help with math because students universally said yes to this question.

Sample

This study uses data from three semesters of new student test information (Fall 2010, Spring 2011 and Fall 2011). Matching surveys to student records produced data for 4,086 students, 55% of whom were women, resembling the college's new student gender distribution of those semesters.

Analysis procedures

In the first stage of this analysis we grouped students into help seeking and not-help seeking and looked to see how well this split predicted first semester retention. In order to have reasonably-sized comparison groups, we defined help-seeking (actually, just "more help-seeking") as those who requested help (answered "Yes") to three or more of these questions. Not-help-seeking answered "Yes" to fewer than three. We found we could improve the ability of our help-seeking variable to predict retention and the other success indicators by also controlling for gender and degree of academic help required. We also examined the relationship between help-seeking and other indicators of success, including GPA, number of credits earned and retention to the following semesters.

Following that analysis, we used stepwise logistic regression to examine the ability of the continuous help-seeking variable (now measured as the number of "Yes" answers to the five areas of possible help in the survey) in combination with other variables to predict first year retention and the other indicators of success. The other independent variables included admission status (first-time=2, transfer=3), gender, number of areas requiring remediation (1 through 3), whether the student attended an orientation session or not, and whether the student signed up for the New Student Seminar in their first semester. In addition, we used stepwise linear regression to examine students' longitudinal outcomes in terms of equated credits earned and GPA.

We believed that all the additional variables were in some way indicators of help-seeking behavior, and initially tested the covariance of these variables. Stepwise regression allowed us to control for the effects of these variables on our survey-based help-seeking variable. All these variables are available before the start of our new students' first semester, giving us the potential of predicting retention and success.

Population distribution

Since the questions asked about academic help, we used test results to stratify the data. Students may be required to take developmental courses in reading, writing/ESL, or math. The second stratification variable was the number of developmental areas required from the tests. The score ranged from 0 to 3. In order to understand behavior better, we did not use regression, but studied each of the stratified levels. The resulting population distribution is shown in Table 1. Thirty-four students had missing test scores and were not included in the study.

Population Distribution among Developmental Need Categories

Gender	Number of Develop-mental Courses Needed	Not-Help-Seeking: Answered Yes to 2 or Fewer Questions	Help-Seeking: Answered Yes to 3 or More Questions	Total
Female	0	284	97	381
Female	1	766	214	980
Female	2	319	217	536
Female	3	193	156	349
Female	Total	1,562	684	2,246
Male	0	270	82	352
Male	1	628	148	776
Male	2	283	188	471
Male	3	141	100	241
Male	Total	1,322	518	1,840
Total	Total	2,884	1,202	4,086

Table 1

29% of the students fell into the help-seeking category.

Analysis

We then used the LaGuardia data warehouse to build queries to determine whether help-seeking students of the same gender and level of developmental skills did better on retention and retention predictor variables at the end of their respective first semesters than not-help seeking students.

As noted above, we examined: 1) Average equated credits earned (equated credits include developmental course credits); 2) Grade point average (GPA); 3) Semester-to-semester retention; and 4) One-year retention.

		Average Equated Credits Earned in the First Semester			
Gender	**Number of Developmental Courses Needed**	**Not-Help-Seeking: Answered Yes to 2 or Fewer Questions**	**Help-Seeking: Answered Yes to 3 or More Questions**	**Difference**	**Signifi-cance**
Female	**0**	**10.7**	**11.9**	**1.2**	
Female	**1**	**11.0**	**12.5**	**1.5**	*
Female	**2**	**10.6**	**14.1**	**3.5**	*
Female	**3**	**10.9**	**13.3**	**2.4**	*
Male	**0**	**11.2**	**12.7**	**1.5**	
Male	**1**	**10.0**	**12.4**	**2.4**	*
Male	**2**	**9.4**	**12.1**	**2.7**	*
Male	**3**	**9.0**	**12.6**	**3.6**	*

Table 2   * Significant at .05 (Student's T-test)

In Table 2 we see that at all developmental need levels for both genders help seeking students earned more equated credits in their first semester. The highest differentiation seems to be for those who require the most remediation. Those with greater developmental needs who seek help earn approximately one three-credit course more in the first semester than not-help-seeking students.

		First Semester Grade Point Average			
Gender	**Number of Developmental Courses Needed**	**Not-Help-Seeking: Answered Yes to 2 or Fewer Questions**	**Help-Seeking: Answered Yes to 3 or More Questions**	**Difference**	**Signifi-cance**
Female	**0**	**2.96**	**3.15**	**0.19**	
Female	**1**	**2.73**	**3.06**	**0.33**	
Female	**2**	**2.67**	**3.24**	**0.57**	
Female	**3**	**2.75**	**2.90**	**0.15**	
Male	**0**	**2.85**	**2.89**	**0.04**	
Male	**1**	**2.48**	**2.91**	**0.43**	*
Male	**2**	**2.48**	**2.84**	**0.36**	
Male	**3**	**2.30**	**2.98**	**0.68**	

Table 3   * Significant at .05 (Student's T-test)

In Table 3 we see that help-seeking somewhat predicts grade point average for the first semester. For males, in the category of needing no developmental courses, however, help seeking predicted only a very small GPA improvement. GPA appears to have too much variance to easily detect significant differences.

Semester-to-Semester Retention Rate					
Gender	Number of Developmental Courses Needed	Not-Help-Seeking: Answered Yes to 2 or Fewer Questions	Help-Seeking: Answered Yes to 3 or More Questions	Difference	Signifi-cance
Female	0	80%	91%	11 ppts	
Female	1	79%	85%	6 ppts	
Female	2	76%	87%	11 ppts	*
Female	3	76%	84%	8 ppts	
Male	0	79%	84%	5 ppts	
Male	1	75%	82%	7 ppts	
Male	2	68%	80%	12 ppts	*
Male	3	62%	74%	12 ppts	*

Table 4   * Significant at .05 (Chi-square test)

Within the stratification categories, the difference between help-seekers and not-help -seekers ranged from five to twelve percentage points. Combining the information we have 16 categories of students where the average retention rates ranged from 61.7% for males needing all three developmental subjects and who were not help-seeking to 90.7% for females with no developmental requirements who were help seeking. Significance testing is encouraging, however, only for males with higher developmental needs.

One-Year Retention Rate					
Gender	Number of Developmental Courses Needed	Not-Help-Seeking: Answered Yes to 2 or Fewer Questions	Help-Seeking: Answered Yes to 3 or More Questions	Difference	Signifi-cance
Female	0	76%	85%	9 ppts.	
Female	1	75%	83%	8 ppts.	*
Female	2	69%	79%	10 ppts.	*
Female	3	67%	74%	7 ppts.	
Male	0	74%	79%	5 ppts.	
Male	1	70%	79%	9 ppts.	*
Male	2	63%	74%	11 ppts.	*
Male	3	55%	65%	10 ppts.	

Table 5   * Significant at .05 (Chi-square test)

Table 5 shows that help seeking also predicts one-year retention levels for the stratification levels. There is a 30 percentage point difference between not-help -seeking males with three areas of developmental need compared to help-seeking females with no developmental needs.

Orientation sessions are highly recommended to students, but voluntary. New Student Seminar is required, but a large number of students figure out how to avoid the non-credit course, especially in their first semester (where it is designed to do the most good). A subset of the group of students who were designated help-seeking, 442, also attended the pre-first-semester orientation. We matched orientation sign-up sheets to the data in our warehouse. We call these students "double help-seeking." The stratified retention results for these students are shown below.

Double Help Seeking			
Gender	Number of Developmental Courses Needed	Semester-to-Semester Retention	One-Year Retention
Female	0	94%	89%
Female	1	89%	87%
Female	2	88%	83%
Female	3	86%	78%
Male	0	82%	82%
Male	1	85%	81%
Male	2	86%	83%
Male	3	78%	74%

Table 6

Table 6 can be compared against Tables 4 and 5, the columns for Help Seeking. For example, one-year retention for help-seeking females with no remediation needs goes from 85% to 89% when we include only those who attended orientation. Clearly the more information we can obtain on help-seeking, the more we know about the probability of retaining a student in their first year.

Regression

In order to better understand the relationship among the variables described above, we used stepwise logistic regression to develop formulas to predict the probability of retention to the next semester and next year, and we used stepwise linear regression to predict the first semester grade point average and credits earned. All results were encouraging in a statistical sense, but limited in apparent usefulness when used to administratively select students for possible interventions.

We will use the logistic regression for the probability of being retained to the second semester as an example. If the reader would like to examine the regression results for the other independent variables, please send us a note.

Analysis of Maximum Likelihood Estimates--Predicting Return Next Semester (=1)					
Parmeter	DF	Estimate	Standard Error	Wald Chi-Square	Pr>ChiSq
Intercept	1	1.5290	0.1484	106.1491	<.0001
Gender (1=F, 0=M)	1	0.1729	0.0382	20.5279	<.0001
Age	1	(0.0133)	0.0061	4.7554	0.0292
Adm Status (2=1st time, 3=transfer)	1	0.2864	0.1015	7.9556	0.0048
Total developmental subjects requires (0-3)	1	(0.1672)	0.0421	15.8043	<.0001
Total requests for help (0-5)	1	0.0137	0.0266	26.2899	<.0001

Table 7

In Table 7 we can see that five variables were entered with confidence levels higher than 95%. Increased help-seeking (requesting help on more of the five questions) is associated with a higher probability of retention, when gender, age, admissions status, and the total number of developmental subjects required are controlled for. A Hosmer and Lemeshow Goodness-of-Fit Test gave a Chi-Square of only 15.4 with eight degrees of freedom and a Pr > ChiSq of 0.0524, indicating a lower level of curve fitting than might be useful to decision makers.

As an example of the difficulty of attempting to use the formula to find students needing an intervention, we calculated the probability of retention for each student using the formula above and made an arbitrary split such that the number of false negatives equaled the number of false positives. Among the students in the study, 78% actually returned the next semester. The predicted probabilities of return ranged from 92% to 61%. After ordering the predicted probabilities, we split the students at the predicted return probability of 78.44%, such that the number predicted to return equaled the number who actually returned.

	Actual Total	Predicted	Correct Predictions	Number of Errors	% Error
Returned	3,187	3,187	2,546	641 (false positives)	20%
Not returned	899	899	258	641 (false negatives)	71%

Table 8

Table 8 describes the result of splitting the students this way to predict post hoc the return of students used to build the formula. At this split point, 20.1% of our picks to return would have been incorrect, while 71.3% of our picks not to return would also have been wrong. Had we used this formula to find students in need of an intervention, we would have missed 641 students who we said would be retained, but who did not return, and we would have applied our intervention to another 641 who would not have needed it.

We also noted that when we used the continuous help-seeking variable gained from the questionnaire, the addition of information on whether students attended orientation and whether students signed up for New Student Seminar did not add significance to the prediction of the probability of dropping out.

Conclusion

Gender, age, developmental needs, admissions status, and a measure of help-seeking behavior can be used to predict retention and retention-related variables like the number of credits accumulated in the first semester and first semester grade point average. Nevertheless, the combined variables at this level would still miss large numbers of students who drop out. Even using stepwise logistic regression, the college's ability to predict enrollment in the next semester appears to be an insufficient basis for targeting interventions.

Students drop out because of many forces and pressures. An inability to solve problems, especially an ability to seek help, appears to be one of those factors. Nevertheless, many students with measurable help-seeking skills appear to be dropping out. Besides improving our ability to measure students' problem-solving skills, we also need to understand external pressures on students better. Certainly, some problems are more intractable than others.

In the end, community colleges should be more sensitive to students' problem solving skills, through assessing these skills better and working to improve them.

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