



EARLY VS. LATE ENROLLERS: DOES ENROLLMENT PROCRASTINATION AFFECT ACADEMIC SUCCESS?

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PURPOSE

The purpose of the present study was to identify specific predictors of academic success in terms of successful completion of courses. The specific factor of interest in this study was enrollment date. Previous research has found that procrastination; the act of putting things off intentionally or habitually is related to poor school performance (see Senecal, Koestner, & Vallerand, 1995). Therefore, we wanted to find out whether the number of days between the class start date and students' first enrolled date predicted the students' chances of passing that class. In addition to this variable, we included student demographic variables such as age, sex and ethnicity; student service classifications such as EOPS, DSPS, and Veteran status; assessment level score totals at the time of entry; and, term specific information such as total number of units attempted and total number of courses enrolled.

METHOD

Data were obtained for the fall and spring terms of academic school year 2007-08 through the System 2000 database. The total number of distinct students enrolled in the fall and spring term of 2007-08 was 23,258. However, 5,276 students were screened out of the analyses because they did not have assessment scores. We included control variables that test for a number of rival variables that might predict course success. For instance, we hypothesized that economically disadvantaged first generation (EOPS) college students might struggle more than other students; EOPS status being negatively related to success. We also hypothesized that DSPS students might face more significant hurdles to learning in their classes, resulting in a lower likelihood of success. Veteran status was also anticipated to have a slight negative effect on the odds of course success simply because of the added stressors that exist within the population of veterans of military combat. The key independent variable, of course, is the gap in between the enrollment date and the start date of the semester. We hypothesized that the earlier students enrolled in a course, the greater the chance students would successfully complete the course with all other factors being equal.

RESULTS

Table 1 provides the descriptive statistics for each of the variables used to predict course success for the students in 2007-08. The majority of the students in this cohort were female, Non-White taking approximately 9 units or 3 classes per semester. The average number of days between when students enrolled in a course and when the course started in the semester was approximately 35 days. As seen, the range of days between when students enrolled and when the course started was as late as

123 days after the start date and as early as 207 days before the start date. These extreme scores reflect the types of courses students are enrolling in. For example, many of the courses where enrollment dates are midway through the semester or towards the end of the semester reflect courses that are open entry; courses such as Computer Software Applications 20 or Reading 98. Courses with enrollments close or at the end of the previous term reflect course that begin late starting classes such as Guidance 11.

Table 1. Descriptive Statistics for Each Variable

Variable	Mean	Min	Max
Sex (Female = 1)	.58	0	1
Ethnic Group (White = 1)	.29	0	1
DSPS (Yes = 1)	.03	0	1
EOPS (Yes = 1)	.08	0	1
Veteran (Yes = 1)	.01	0	1
Age	25.21	14	87
Days Between Enrollment and Start Date	34.88	-123	207
Units Per Semester	8.99	0.5	37
Number of Classes Per Semester	2.92	1	22
Entry Skill Level*	5.82	3	9

Note. Means based on duplicated cases

*Entry skill level reflects the student's assessment level total for reading, writing and math.

Logistic Regression. We used logistic regression analysis because of the dichotomous nature of the dependent variable (1 = C or better grade/Successful Completion, 0 = Unsuccessful completion) Table 2 presents the data from the analysis. Overall, the model for the prediction of course was a good fit; with the addition of the variables improving the prediction of success by 1.8 percent. Although this is a small percentage, the data contained such a large number of cases that any small change in the predictability of the model will increase the chances of the model becoming a statistically significant model. Therefore, in tandem with this model a multiple regression analysis was done to reduce the sample size (only analyzing distinct student inputs and outputs) to validate the findings of the logistic regression analysis.

Table 2. Logistic Regression Models Predicting Individual Course Success

Variables	Co-Efficients	p-value (2-tailed)	Prob. when X is low	Prob. when X is high
Constant	-1.468	.000		
Sex (Female = 1)	.059	.000*	62.2	63.6
Ethnic Group (White = 1)	.092	.000*	62.4	64.5
DSPS (Yes = 1)	.014	.690	63.1	63.4
EOPS (Yes = 1)	-.110	.000*	63.3	60.8
Veteran (Yes = 1)	-.101	.334	63.1	60.7
Age	.017	.000*	58.5	82.9
Days Between Enrollment and Start Date	.006	.000*	39.1	82.4
Units Per Semester	.032	.000*	54.6	79.4
Number of Classes Per Semester	.062	.000*	58.8	84.0
Entry Skill Level	.115	.000*	55.1	70.9
Chi-Square	3443.367			
Degrees of Freedom	10			
Nagelkerke R-Squared	.050			
Proportion Reduction in Error	.018			

* Significant predictors in model

Results from the logistic regression found all variables had a significant impact on course success with the exception of Veteran and DSPS status. Whether someone was classified as a veteran or DSPS did not add predictive value to course success. As seen from Table 2; age, days between enrollment date and class start date, the number of units taken during the semester, and entry skill level were the best predictors of course success. Older students who enrolled earlier, took more units during the semester and had high assessment scores had a better chance of passing their courses than younger students who enrolled later, took a lighter unit load during the semester and had low assessment scores. The impact each variable has on course success is listed in Table 2 and readers should note that the difference in course success between early and late enrollers can be as large as 43.3 percent. As mentioned, however, because the data used to predict course success was based on duplicative predictors dependent on the number of courses each student took per semester as the outcome, a multiple regression analysis was done to provide additional support for the findings.

Multiple Regression. In order to examine the true predictive value of each of the variables, a proportion of success was calculated to get an average success rate for each student separately. This was achieved by calculating the proportion of classes passed by each student. As seen in Table 3, knowledge of each variable explained approximately 23 percent of the variance found in the proportion of success. The average proportion of success for the entire year was 57.2 percent. The coefficients suggest that for each additional day that a student enrolled before the start of the term their expected percentage of passed classes rose by 0.12 points. Put another way, students registering 100 days before the start of classes were likely to have successfully completed their course work 12 percent more than an individual registering the first day of classes.

Table 3. Multiple Regression Model Predicting Proportion of Course Success

Variables	Unstandardized Co-Efficients	p-value (2-tailed)	Partial r-squared
Constant	8.132	.000	
Sex (Female = 1)	2.585	.000*	.030
Ethnic Group (White = 1)	2.155	.002*	.023
DSPS (Yes = 1)	1.253	.466	.005
EOPS (Yes = 1)	-4.912	.000*	-.031
Veteran (Yes = 1)	0.263	.065	.000
Age	0.462	.000*	.086
Days Between Enrollment and Start Date	0.119	.000*	.092
Units Per Semester	0.659	.000*	.036
Number of Classes Per Semester	1.287	.001*	.024
Entry Skill Level	3.285	.000*	.138
F-test value	104.651		
Residual Degrees of Freedom	10		
Regression Degrees of Freedom	18,241		
Model R-Squared	.233		

* Significant predictors in model

Comparison of the significant predictors between the logistic and multiple regression found all of the same significant predictors. One of the advantages of using a multiple regression model is the ability to identify the unique contribution each variable has on the outcome. Of all the variables, age, the number of days between the enrollment date and class start date, and entry skill level contributed the most explained variance in the proportion of success. Age explained 8.6 percent of the variance, days between enrollment and start date explained 9.2 percent of the variance, and entry skill level explained 13.8 percent of the variance in the proportion of success. What this suggests is that older students who enroll earlier and assess high typically do better in their courses than younger students who enroll later and assess low.

Optimal Enrollment Time Frames. In addition to the analyses described above, exploratory analyses were done to determine the time frame that impacted course success. In the original analyses, this variable had a wide range of scores (-123 to 207 days). In order to narrow down the findings, four cutoff ranges were used to include only data on students who enrolled ± 14 , ± 30 , ± 45 or ± 60 days between their enrollment date and course start date. Based on the exploratory logistic regression analysis, the number of days between the enrollment date and start date begin to impact course success rates at about ± 45 days between these dates. That is, students who enroll at least 45 days before the course start dates have a significantly better chance of passing those courses than students who enroll later. However, the impact of this variable is not statistically significant for students who enroll ± 14 days or ± 30 days between the enrollment date and start date. This suggests that late enrollers who come to the college within a month of a semester starting tend to share common traits in terms of the likelihood of course success.

Class Start Date Controls. Due to the varying start dates for each course during the semester, another set of analyses were conducted to control for course start dates. Data for courses that did not start at

the beginning of each term were screened out to control for the range of days between enrollment dates and course start dates. Based on this exclusion criterion, the significant predictors found in the original analysis were still significant-providing additional evidence that the original results we found were independent of when the class actually started. Therefore, the number of days between a student's enrollment date and the course start date predicted that student's success in that course. However, unlike the original analysis, the number of courses students' were taking became a strong predictor of course success when the initial course start date was controlled for, uniquely explaining 14 percent of the variance in the proportion of success in the multiple regression analysis. But like the original multiple regression analysis, days between enrollment and start date still uniquely explained 9 percent of the variance in the proportion of success; giving further validation to the importance of this factor in academic success.

CONCLUSIONS

Using Logistic and Multiple Regression to predict student success, we found that student's age, the number of days between a student's enrollment date and course start date and students' entry skill level predicted success over and above what ethnicity, total semester units, sex, number of courses, and type of student services could predict. What this suggests is that students who procrastinate and wait until just before the start of the term or after to enroll may not be as motivated as students who enroll early and that this procrastination affects their overall chances of passing their courses. The results suggest that late enrollers may need specifically targeted interventions designed to improve their chances of academic success. Programs like mandatory orientations might be particularly useful for such students to help inculcate study habits and college-level expectations in this more vulnerable population.