AN EXPLORATORY STUDY OF THE EFFECT OF REWARDS AND DEADLINES ON ACADEMIC PROCRASTINATION IN WEB-BASED CLASSES

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ABSTRACT

This study investigated the effectiveness of two types of task importance (reward and deadlines) designed to reduce academic procrastination in Web-based classes. The results found students procrastinated less when rewarded for early completion of assignments than by deadlines alone. The results were statistically significant in the third assignment and in the same direction for the first two assignments, though not statistically significant. Procrastination was found to have a negative effect on academic performance, as reflected in exam scores and final course grades.

INTRODUCTION

Procrastination has been defined as the putting off or delaying of a task (Solomon and Rothblum 1984). In fact, procrastination is so prevalent in universities and colleges, researchers have coined the term “academic procrastination” to refer to the delaying of completing an academic task (Rothblum, Solomon, and Murakami 1986). Approximately 20% of all adults are chronic procrastinators (Harriott and Ferrari 1996), and according to Solomon and Rothblum (1984), 46% of students admit to having procrastinated on an academic task.

The negative consequences of academic procrastination can be devastating to students. Academic procrastination has led to missing or late assignments, cramming, test anxiety (Fritzsche, Young, and Hickson 2003; Rothblum, Solomon, and Murakami 1986), lower grades, (Owens and Newbegin 1997; Wesley 1994), higher course withdrawals (Semb, Glick, and Spencer 1979), higher stress levels, and more illnesses (Tice and Baumeister 1997).

Contributing to the problem of academic procrastination is the growing trend among universities and colleges to offer online or web-based courses (Allen and Seaman 2008). Web-based courses offer students greater flexibility, but a growing stream of research suggests students enrolled in web-based courses are more susceptible to academic procrastination. Procrastination was reported by students as one of the primary reasons they failed or dropped a web-based course in a recent analysis of the factors affecting retention in web-based courses (Doherty 2006). Approximately 19% of students who failed or withdrew from a web-based course attributed it to putting off an assignment causing them to get behind
in the course and 23% of students mentioned the ease of procrastinating in a web-based course. Elevers, Polzella and Graetz (2003) reported that 90% of students in a web-based psychology class disliked the class because it was easy to get behind.

Enrollment in web-based courses has been increasing over the past decade. According to a recent study by the Sloan Consortium, more than 20% of all higher education students were enrolled in at least one web-based course in the fall of 2007, an increase of 12% over the previous year (Allen and Seaman, 2008). As more courses are offered in a web-based format, procrastination will continue to plague students and instructors alike.

**LITERATURE REVIEW**

Several recent studies have examined the relationship between procrastination and academic performance in web-based courses. Elves, Polzella and Graetz (2003) found procrastination was negatively related with exam scores in web-based courses, but not with traditional lecture classes. They suggested that traditional, lecture students are exposed to the material throughout the semester unlike web-based students who may only look at the material the day before taking an exam. Moon and Illingworth (2005) examined academic procrastination in introductory psychology classes. They found students who took their online tests earlier in the week received higher test scores than those who took their tests later in the week. These studies highlight the importance of reducing academic procrastination, especially for students enrolled in web-based courses.

Procrastination has been studied extensively in the social sciences over the past 30 years. The majority of these studies have focused on cognitive and behavioral traits including perfectionism, role-confl ict, shame and guilt, anxiety, self-control, time, locus of control, fear of failure, task avoidance, and motivation (Brownlow and Reasinger 2000; Fee and Tangey 2000; Onwuegbuzie 2000; Schouwenburg and Groenewoud 2001; Senecal, Julien, and Guay 2003). These studies offer valuable insight into the antecedents of procrastination, but as educators, these are not variables we can control.

In contrast, Paden and Stell (1997) proposed a model of student procrastination that identified task characteristics related to assignments that are controllable by the instructor. The task characteristics included in the model were task importance, task appeal and task difficulty. Task importance was defined as norms, deadlines, rewards and interdependence. Task appeal consisted of interest level and skill variety and task difficulty included knowledge required, clarity and the scope of the task. These three characteristics were expected to influence the degree of student procrastination on assignments.

Ackerman and Gross (2005) examined the task characteristics identified by Paden and Stell (1997). Their findings suggested that instructors could help students reduce procrastination by providing interesting assignments, clear instructions, and rewards. In their posttest sample, rewards were reported as a major factor in reducing procrastination by 80% of the students. It appeared students perceived rewards to be an incentive to begin assignments early, thereby reducing procrastination.
The effects of rewards in reducing student procrastination have been investigated in several studies. Ferrari and McGowan (2002) examined rewards as a strategy to reduce procrastination in introductory psychology classes. Students were required to complete five research hours per quarter or receive an Incomplete. If they received an Incomplete, they had to finish by the next quarter or receive an F. They designed a bonus program to reward students for early completion. Before implementing the bonus program, 60% of students received an Incomplete. After the bonus program, only 40% received an Incomplete. Their findings showed that students who were rewarded with bonus points were more likely to complete their research assignment and to complete it earlier than students not offered bonus points.

The purpose of this study is to extend previous research of the intervention strategies used by professors to reduce procrastination in a web-based academic setting. The study focuses on two of the factors identified by Paden and Stell (1997), rewards and deadlines. This study examines the extent to which deadlines (late assignments not accepted), or deadlines with reward (bonus points for early submission) reduced procrastination as measured by completion of the assignment, completion of the course, and performance in the course.

**METHOD**

The participants for the study were 56 junior and senior level college students enrolled in a web-based business class at a small, southern state university. There were 15 male students and 41 female students. Participants ranged in age from 21 to 55 (M = 29, SD = 8.78). The median age was 24.

The spring semester was chosen for both classes to control for seasonal variances. The spring semester is 16 weeks and includes a spring break after the 8th week.

The same professor taught the classes and there were no significant differences of age, gender, or final course grade between the deadlines only class and the deadlines with rewards class.

**Measures**

**Deadlines Only.**

In the class with deadlines only, students (N=33) were required to submit four article summaries worth 20 points each. The 20 points represented 3% of their final course grade. Late assignments were not accepted and the policy was stated in the syllabus and in the assignment instructions. The assignments were identical for both classes and were due at the end of the 3rd, 6th, 10th and 13th week.
Deadlines with Rewards.

In the deadlines with rewards class, students (N=23) received 20 points for their article summaries, but if they turned the assignment in one day early, they received an additional 5 points for a total of 20 bonus points (4 assignments at 5 bonus points each). The bonus points represented approximately 3% of the total 600 points available in the course. The date the assignment was submitted was used to measure the effects of reward (bonus points) and deadlines (late assignments not accepted). Students could turn in assignments early and the dates due were listed in the syllabus.

Dependent measures.

Dependent measures were completion date of assignments, percentage of students who withdrew from the course, average exam score, and final course grade. Students who did not turn in one of the assignments by the due date were considered to be procrastinators. Students who completed all assignments by the due date were considered to be non procrastinators. Final course grades were assigned numeric numbers (A=4, B=3, C=2, D=1, F=0).

RESULTS

As shown in Table 1, a higher percentage of students enrolled in the Deadlines with Rewards class completed the first three assignments compared to the Deadlines Only class. Although the relationship was not statistically significant for the first two assignments, it was in the same direction. In the third assignment, a statistically significant difference was found between the two classes (χ² = 5.58, p > .018). All of the students enrolled in the Deadlines with Rewards class completed the third assignment compared to 79% of the students enrolled in the Deadlines Only class. Although a higher percentage of students enrolled in the Deadlines Only class completed the fourth assignment, there was not a significant difference in the completion rate between the classes in the fourth assignment.

<table>
<thead>
<tr>
<th>Assignment #</th>
<th>Week</th>
<th>Deadlines Only</th>
<th>Deadlines With Rewards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment #1</td>
<td>3</td>
<td>82%</td>
<td>83%</td>
</tr>
<tr>
<td>Assignment #2</td>
<td>6</td>
<td>82%</td>
<td>87%</td>
</tr>
<tr>
<td>Assignment #3</td>
<td>10</td>
<td>79%</td>
<td>100%</td>
</tr>
<tr>
<td>Assignment #4</td>
<td>13</td>
<td>88%</td>
<td>87%</td>
</tr>
</tbody>
</table>
In the course withdrawal rate, there was not a significant difference between the two classes, although a higher percentage of students withdrew from the Deadlines Only class (11%) versus the Deadlines with Rewards class (8%). Of the 37 students enrolled in the Deadlines Only class, ten did not complete the first assignment, including four of the students who later withdrew from the course. Similarly, of the 25 students enrolled in the Deadlines with Rewards class, six students did not complete the first assignment, including two students who subsequently withdrew from the course. Combining the data of the classes revealed that 38% of students who missed the first assignment withdrew from the course. None of the students who withdrew from the courses completed any assignments and they were excluded from the rest of the study.

There was a statistically significant difference in the both the exam scores and final course grade between students who submitted their assignments on time and those who did not submit assignments. Students who completed all the assignments had a higher average exam score ($M = 80.35$) than students who did not complete all the assignments ($M = 75.10$, $t = 1.79$, $p > .079$). Students who completed all the assignments had a higher course grade ($M = 3.42$) than those who did not complete their assignments ($M = 2.42$, $t = 4.585$ $p > .00$).

**DISCUSSION**

The findings showed deadlines with rewards motivated students to complete their assignments, especially in the middle of the semester. Although the differences were not statistically significant in the first or second assignment, a higher percentage of students enrolled in the Deadlines with Rewards class completed the first three assignments compared to students in the Deadlines Only class. Rewards clearly reduced student procrastination for the third assignment with all students completing the assignment.

For the fourth assignment, the completion rate was 88% for the Deadlines with Rewards class and 89% for the Deadlines Only class. Both classes had a higher completion rate in the fourth assignment compared to the first two assignments. Compared to the third assignment, the completion rate decreased 11% in the Deadlines with Rewards class and increased 10% in the Deadlines Only class. A higher percentage of students in the Deadlines Only class completed the fourth assignment (89%) than their first (82%), second (82%) or third (79%) assignments.

Why did more students in the Deadlines Only class complete the fourth assignment compared to the first three assignments? One possible reason is students are more grade-oriented near the end of the semester and therefore, more likely to be motivated to complete assignments, with or without rewards. Bender (2007), in a study of time of participation effect and grade-orientation, found students were more grade-oriented in the 13th week of the semester than in the fifth or eleventh weeks. Bender’s (2007) results were supported in the Deadlines Only class. A higher percentage of students enrolled in the Deadlines Only class completed the fourth assignment in the 13th week compared to the assignments due in the 3rd, 6th, or 10th week.
Procrastination has been linked with higher withdrawal rates in previous studies, but there were no significant differences in the withdrawal rate between the classes in this study. It is worth noting that the students who withdrew from the classes even late in the semester never completed any of the assignments. Perhaps as Doherty (2006) reported, web-based students find it easy to procrastinate, causing them to fall behind in assignments and leading to withdrawal.

This study supports previous studies (Tice and Baumeister 1997) that procrastination has a negative effect on grades. Missing an assignment worth 3% of the final course grade should be expected to negatively impact the final course grade. However, it was an interesting finding that students who completed all assignments on time (non procrastinators) scored on average 5 points higher on exams than students who missed at least one assignment (procrastinators). Students who delay completing assignments may delay studying for an exam. They would not only have less time to study, but would be more vulnerable to unforeseen delays which would negatively affect their grades.

CONCLUSIONS AND FUTURE RESEARCH

The findings of this study clearly show that deadlines with rewards are helpful in reducing student procrastination, especially in the middle of the semester. As the semester progressed, students became more receptive to rewards. Rewards especially motivated students to complete assignments in the middle of the semester. In the latter part of the semester, the use of deadlines appears to work as well as rewards since students are more grade-oriented at the end of the semester. Future research should investigate the timing of rewards and incentives to reduce procrastination. It is possible offering students greater points at the beginning of the semester would encourage early participation and reduce procrastination.

Students withdraw from a course for many reasons. One reason may be missing a deadline for an assignment due to procrastination. In this study, 38% of the students who missed the first assignment withdrew from the class. The question that remains to be answered is whether students withdraw from the class because they were behind in assignments as suggested by Doherty (2006) or they did not complete the assignments because they planned to withdraw. Future research should seek to answer that question and depending upon the answer, explore strategies to reduce student procrastination within the first few weeks of the semester.

This study provides additional evidence that procrastination affects student learning and is reflected, not only in the final course grade, but also in the exam scores. As educators, we have the opportunity to design our courses to encourage learning and reduce procrastination. As Ackerman and Gross (2005) reported, rewards and incentives may motivate students to start earlier on their assignments and reduce procrastination. Students that start earlier are more likely to do a better job and receive a higher grade in the course.

There are limitations to this study. The sample size was small and the classes were web-based classes. Future research should examine the effects of the mode of delivery of instruction on procrastination.

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Another limitation is the measurement of procrastination. Students were considered to be procrastinators if they did not complete an assignment by the due date. There may be other reasons why students do not complete an assignment. Students may dislike writing assignments and therefore be willing to accept lower grades as a consequence. While the present study measured procrastination as behavior, the majority of the studies exploring academic procrastination have used a self-reported measure of procrastination. Future research should utilize both measures to capture the multidimensional construct of procrastination under differing conditions.

REFERENCES


