

# Optimization of Academic Assignment Presentation: Using Behavioral Economics to Effect Positive Student Outcomes

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Keywords: academic, behavioral economics, loss aversion, procrastination

## Abstract

How assignments are presented to college students may affect the students' performance. One of the elements under students' control is the schedule that they follow when preparing and presenting their work for evaluation. Procrastination affects students' academic performance. Faculty may use findings from behavioral economics, such as loss aversion theory, to encourage positive student behaviors. Students, when seeking to complete their academic work and meet their academic responsibilities, must make choices that require evaluating tradeoffs (e.g., complete the assignment or join friends at a social gathering, submit an assignment response on time even though the submission does not reflect best work or complete the assignment but accept a grade sanction for late submission). Improving students' ability to make choices that best serve their academic interests, particularly in regard to the organization of their time and effort, may lead to the students to more fully meeting academic requirements.

## Introduction

Instructors at all levels, particularly those leading college-level courses, share a judgment that students benefit from well-focused study, careful assignment preparation, and time on task. These academic judgments are taken *prima facie* for the purposes of this paper. These behaviors benefit the students' ability to deeply learn concepts and data that closely align with the course learning objectives. However, an all-too-common student behavior has a negative effect on both learning and earned grades, one that may negate the benefits of the instructor's efforts: late preparation and submission of assignment responses, caused by intentional procrastination.

## Choice-Failure Loop

This paper responds to anecdotal comments from college faculty at both two- and four-year institutions (including facilitators of undergraduate and graduate courses) regarding the relationship between the students' procrastinating in the submission of assignment responses and their overall academic performance.

## Procrastination is a Choice

Those students who procrastinate in the preparation of their work choose to do so. Because students are often obligated to concurrently attend to multiple tasks that compete for their attention, they must choose not only which tasks to complete, but the prioritization of their efforts and the amount of time and effort that they will give to each task (O'Donoghue & Rabin, 2001). By recognizing this competition for students' interests, an instructor may create an environment in which students are encouraged to focus first on those academic activities that will best serve them, leaving social and personal commitments to be attended after the academic requirements are met.

## Common Negative Effects of Student Procrastination

Students who wait until the last minute to prepare and submit their assignments for evaluation are likely to suffer both in the degree to which they may deeply learn the course material reflected by the assignments and the grades that they earn in return for their effort. Procrastination has a significant effect on the students' earned grades, the degree to which knowledge of the course material is acquired and retained, and—if procrastination were demonstrated to be a pattern of behavior—the quality of the students' entire course of study.

## Effects Greater in Computer-Mediated Courses

The negative effects of procrastination may be most pronounced in computer-mediated (online)



courses (Elvers, Polzella, & Graetz, Ken, 2009). Students attending face-to-face (onground) courses are encouraged to continue to participate through the social interactions that come with physical contact with other students and the principal course faculty. However, students in computer-mediated courses do not have the same type of periodic social interactions, as do students in face-to-face lectures, seminars, and workshops. This paucity of regularly-scheduled exposure to synchronous content discussions and the separated nature of in-residence viewing of recorded lectures and reading course texts may create a distance between the students and their recognized academic obligations that may lead them to delay their intentional study activities (Elvers et al., 2009).

#### **Self-direction in Computer-Mediated Courses**

Students who are most well self-directed and able to avoid the temptation of procrastinating in their academic work are more likely to succeed in computer-mediated classes than students who lack the self-control mechanisms that mitigate the common student procrastination tendency (Leasure, Davis, & Thievon, 2000).

#### **Instructor Control in Computer-Mediated Courses**

The scope of access to digital resources at any time (24/7 access) that students in computer-mediated courses have affords them flexibility in scheduling their academic activities; however, it is exactly this agency that may lead to increased procrastination. Students may judge that they have sufficient time to complete their work "later on." Instructors should encourage students to work in a time-efficient manner toward completing assignments, possibly including time management skills in the course curriculum (Lozano-Nieto, Guijarro, & Berjano, 2006), a topic that deserves separate discussion.

#### **Student Choices: Faculty Observations**

Faculty members often note a correlation between late submissions and students' most fully completing assignments, including students' not participating in peer and faculty review of drafts and students not fully preparing for formal class discussions. Following from the temporal, cognitive, and emotional challenges that come with participating in peer- and faculty-review of draft compositions, students may find these requirements daunting and fail to pursue the benefits that come from participating in these pre-submission reviews. Tasks that are perceived as overly difficult to complete are correlated with procrastinating in the preparation and pursuit of completing the tasks (Harris & Sutton, 1983). However, high academic goals, if set by the faculty and accepted by the student,s may encourage improved student performance, mitigating

the loss aversion response, by encouraging students to raise the quality of their work to the level expected by the faculty and thereby demonstrating greater command of course material. This mitigation strategy may serve the students, as it balances self-enhancement and self-improvement, as addressed in research by Knell & Falk (2004) and Koch & Nafziger (2008).

#### **Procrastination Leads to Rushing**

Faculty have anecdotally noted that students who procrastinate often rush the preparation of their work, forcing a limitation upon the amount of time that they give to their academic efforts. This limitation of time on task in regard to the academic activities has both immediate and long-term effects on a student's gaining the most value from the formal academic process, as noted in Karweight's (1982) review of research related to time on task and its effects on student learning. Students who procrastinate in the completion of their assignments are likely to suffer multiple ill effects: not the least of which is a grade sanction for late submission of their work.

#### **Procrastination: Psychological Description**

Procrastination is not a stable personality disposition; rather, it is a behavior that demonstrates dynamic characteristics and may be demonstrated on occasion (Moon & Illingworth, 2005). Procrastination may best be thought of as a situation-specific behavior, as compared to a trait of one's personality; it is a behavior, presumably chosen, by the person. However, whether stable or dynamic, procrastination does a disservice to a student's academic efforts and evaluation outcomes.

While procrastination is a commonly-used term, it may be helpful to define procrastination. Psychologists are consistent in their descriptions of procrastination, having defined it as:

- "An irrational tendency to delay tasks that should be completed" (Lay, 1986, as cited in Flett, Blankstein, Hewitt, & Koledin, 1992, p. 85).
- "Needlessly delaying tasks to the point of experiencing discomfort" (Solomon & Rothblum, 1984, p. 503)
- An act in which one knows the expectation to "perform an activity...and perhaps even [wants] to do so, yet [fails] to motivate [himself or herself] to perform the activity within the desired or expected time frame" (Senécal, Koestner, & Vallerand, 1995, p. 607).
- Taking "more than a reasonable length of time to complete a task," including "both frequent delay and



considerable anxiety” (Rothblum, Solomon, & Murakami, 1986, p. 387)

### **Pervasiveness of Procrastination**

Ellis & Knaus (1977) found procrastination to be a pervasive behavioral characteristic of college students. Even in the previous generation, researchers estimated that 95% of students procrastinated in the completion of their assignments (as cited in Senécal et al., 1995; as cited in Solomon & Rothblum, 1984).

Procrastination may lead to detrimental effects: experiencing subjective discomfort, lower earned grades, course withdrawal, and potentially, academic failure (Solomon & Rothblum, 1984). Almost half of all surveyed students (46%) reported that they “nearly always or always procrastinate on writing a term paper. Approximately a third of students report procrastinating on studying for exams (27.6%) and reading weekly assignments (30.1%) (Solomon & Rothblum, 1984, p. 505).

### **Cause of Procrastination**

In a survey of performance, Beswick Rothblum, and Mann (1988) found that procrastination may be a coping pattern for dealing with decisional conflict. For example, students who are unsure of their commitment to a course of study may demonstrate a greater degree of procrastination than do students who are committed to their course of study (e.g., selected major or academic discipline). It is possible that students who procrastinate, which is correlated with earning lower grades—for multiple reasons, may enter a self-reinforcing loop that encourages them to question their commitment to their established course of action, leading to additional procrastination on future assignments, which, in turn, leads to the students’ earning lower grades.

Faculty commonly express the judgment that procrastination is at least as prevalent as in the previous generation and may be even more pervasive for the current generation of students. Millennial students (also known as Generation Y and digital natives) have recognized the negative effects caused by their academic procrastination behaviors. These students may benefit from faculty guidance and training in time management skills (Yonekura, 2006).

### **Procrastination Correlated with Lower Earned Grades**

In general, students want to earn high grades. They often see their earned grades as a reflection of their abilities, and they attribute their self-worth to their grade record (Crocker, Karpinski, Quinn, & Chase, 2003). Any faculty member who has taught at least one section of a college course knows that students, even at noncompetitive institutions, compare their grades to

other's earned grades and can crow about earning an "A." While only a small percentage of undergraduate students should earn the superior grade, and only a small majority of graduate students should, it is the lower performing students that are of most interest for the purposes of this paper.

Among students who do not earn the superior grade of "A" or an above average grade of "B," a pattern of behavior has been demonstrated that leads to the judgment that procrastination in completing and submitting assignment responses is correlated with lower earned grades.

### **Time on Task**

Academic faculty commonly accept that time on task serves the student and leads to more deeply learning the assigned material. Koutropoulos (Koutropoulos, 2011) clearly addresses this judgment in his comment, "One possibility for this lack of confidence on the part of computer users may lie in how much time they've spent using technology...Older students...have been shown to have more proficiency with technology, indicating that greater time on task is beneficial" (Koutropoulos, 2011, para. 34).

In general, the more time that students give to their academic work, the greater the likelihood of positive evaluative outcome. The greater the amount of cognitive attention and effort the students give to their academic work, the more fully they are able to develop appropriate command of the material.

### **Proposition of Solution**

Instructors may encourage students to complete assignments and other course requirements on time by taking advantage of the behavioral economic theory of loss aversion. In doing so, however, the perceived correlation between the pain of losing points toward an earned grade and the actions required to properly complete the assignment must be tightly controlled. Students must perceive a temporal relationship between their choices and the outcome of their efforts. Even as far back as the mid-20<sup>th</sup> century, psychologists recognized that the perception of the temporality of an event's occurring and the effect that the event has on a person's decision-making is highly correlated (Lewin, 1935).

The proposition that addresses these two negative consequences is to motivate students to spend more time on task by integrating data from behavioral economic theory and common instructional best practices. By applying loss aversion theory to the presentation of student assignments, instructors may create an environment in which the students are more likely to respond positively to the course requirements,



submitting their assignments on time and earning the most benefit from their academic efforts. Loss aversion theory addresses the “tendency for individuals to be more sensitive to reductions in their levels of well-being than to increases” in their state of well-being. (Benartzi & Thaler, 1995, p. 73). People are likely to eschew the risk of loss of a valued item more than they are likely to pursue personal benefit or gain. All humans—including, arguably, those in an academic setting—are likely to prefer opportunities that lead to a lower chance of loss, rather than pursue opportunities of equally-balanced positive value, given a static point of reference. Hjorth & Fosgerau (2011, 2012) describe loss aversion as people’s being more averse to losses that are related to a reference point than they are attracted to similarly-sized gains. Each of these descriptions of loss aversion is consistent with Kahneman and Tversky’s (1979) observation, “losses loom larger than gains implies that people impute greater value to a given item when they give it up than when they acquire it” (Ariely, Huber, & Wertenbroch, 2005, p. 134). Kahneman and Tversky also recognized that “the decision weight associated with an event will depend primarily on the perceived likelihood of that event” (1979, p. 289). This observation will be salient to the proposed solution to the problem of student procrastination, as the student’s perception of an assignment grade’s having already been earned will be the fulcrum upon over which the choice as to which activity to pursue will be balanced.

A four-part solution is proposed that will address the salient observations that relate to student performance and seek to minimize the effects of procrastination on academic performance.

#### **Scheduling Pre-submission Review**

Whether procrastination in completing assigned work is consistently a cause for related to reduced student performance is not proven by this study; however, it is accepted as at least an occasional causal agent, particularly as sanctions for late submission and the lack of opportunity for peer- and faculty-review of draft work are common negative outcomes of student procrastination. Late assignment submission commonly results in a grade sanction, sometimes as high as 10% per day late. Drafting assignment responses close to the assignment deadline do not afford the student an opportunity to request review from peers and the instructor. This pre-submission review is a principal component of the recursive writing process and serves students by helping them develop one of the core skills of effective writing: identification of audience expectations by experiencing the responsibilities of

both reader and editor for other student writing (Davis, 2003).

Common faculty comments reflect that there is a correlation between students who seek peer and faculty review of their work prior to final submission of an assignment and the students’ earning higher grades for their work. Tan et al. (2008) found that formal research confirms instructor’s anecdotal judgments of academic performance’s benefiting from this help-seeking behavior and self-regulated learning is correlated with student’s academic success.

Students often respond positively to peer-review exercises and they stay focused on the task of preparing a formal writing assignment when time is scheduled for the activity and completion of the activity is expected of them by the faculty member.

#### **Effective Scheduling of Assignment Deadlines**

Ariely & Wertenbroch (2002) found in two studies—one of general academic performance and one of proofreading performance—that students demonstrate a preference for self-imposed assignment deadlines. The grades earned by students were correlated with having an evenly-spaced schedule of assignment deadlines. Students who selected a sub-optimal deadline schedule (e.g., all assignments due at the end of the semester), earned statistically lower grades than those who either selected a balanced schedule of deadlines or had a balanced schedule imposed upon them.

Participants described by Ariely and Wertenbroch (2002) were more satisfied when they had evenly-spaced, imposed deadlines; they liked their assigned work more. They also devoted greater time to their activity, compared to those who selected their own schedules, usually sub-optimal, end-loaded schedules.

#### **Using Loss Aversion to Encourage Positive Academic Behavior**

Using data from behavioral economics (loss aversion theory), students may be encouraged to complete assignments early (or at least on time) by describing that high grades are given at the beginning of the semester and may be lost during the course of a semester.

If students were told at the beginning of the evaluation period (e.g., academic semester) that they had earned an "A" for each assignment and that points would be deducted if specific objectives were not met, the theory of loss aversion may be used to effect greater academic effort from the students. Such academic objectives may include:



- Submitting a draft of the assignment response at least one week before the assignment deadline.
- Participating in peer review and faculty review activities.
- Submitting the final response by the assignment deadline.
- If any objective were not fulfilled, the students may feel pain from losing points, an application of the loss aversion theory.

This natural aversion to loss is well described by Maddux et al. (2010). While commonly applied to financial transactions, loss aversion theory may also apply to academic performance. The key element to this hypothesis being that the students must perceive that points are already earned (possessed) at the start of the evaluation period, which creates the opportunity for the points to be owned and lost if academic requirements were not met.

### **Proposed Solution**

If students are unable to develop and maintain the self-control systems necessary to avoid procrastinating in the preparation and completion of academic assignments, faculty may develop systems in which procrastination is environmentally discouraged. To this end, faculty may use knowledge from the domain of behavioral economics to create course expectations that serve to encourage students to efficiently

complete assignments on time and meet the faculty's academic expectations.

### **Four-Part Solution**

In an effort to create an environment in which students gain the greatest academic benefit and enjoy their academic activities, the following procedures are proposed:

- Allow students to select the assignment deadlines during a semester-long course.
- Require deadlines to be evenly spaced throughout the evaluation period (e.g., academic semester).
- Require drafts to be submitted for peer and faculty review one week prior to the final assignment deadline.
- Create the perception that the students have already earned an "A" grade for each assignment and that this high grade may be lost if assignment requirements are not met.

### **Final Comment**

While the objective of most academic institutions is not to graduate necessarily happy students regardless of demonstrated academic ability, it would encourage benefits from the institutions' alumni networks and alumni recommendations to prospective students if faculty were to create an environment in which current students both most deeply learn from and most fully enjoy their academic activities.



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