

# Study More Tomorrow

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*We design a commitment device for college students, “Study More Tomorrow,” conduct a randomized controlled trial testing a model of its takeup, and measure its effect on tutoring attendance and grades. The device commits students to attend tutoring if their midterm grade falls below a pre-specified threshold. Unlike other commitment devices tested in the education literature, the contract carries a financial cost for noncompliance. Students value the contract, with 10% takeup among those randomly assigned a contract offer. Takeup is not higher among students randomly assigned to a lower contract price, however. The contract does not robustly affect tutoring attendance or student course grades. Our results show that college students are willing to pay for study commitment devices.*

**Keywords:** *economics of education, higher education, commitment contracts, procrastination, randomized controlled trials*

NEARLY two of every five students who enroll in college fail to graduate within 6 years (National Center for Education Statistics, 2020). Several factors may inhibit student success, including financial need (Chen & DesJardins, 2010); insufficient information, counseling, or other nonfinancial barriers (Dynarski et al., 2022); low expectations of high school teachers (Papageorge et al., 2020); and food insecurity (Wolfson et al., 2022). Insufficient study effort, occasioned by these factors or arising independently, can also prevent students from advancing. College students who perform poorly often exhibit ineffective study habits, such as studying less than intended or cramming for exams (Beattie et al., 2019; Oreopoulos & Petronijevic, 2019). Procrastination, as measured by delays in registering for courses, is associated with lower grades (Banerjee & Duflo, 2014; De Paola & Scoppa,

2015; Pugatch & Wilson, 2018). These patterns suggest that improving study habits could improve academic outcomes among college students.

One promising strategy to improve college students’ study habits is a commitment device, a contract the student makes with their (future) self to study or complete other academic tasks they may be tempted to ignore. The classic example of a commitment device is Odysseus tying himself to the shipmast to resist the Sirens.<sup>1</sup> In experimental evaluations, several types of commitment devices have improved performance of university students, including self-imposed deadlines (Ariely & Wertenbroch, 2002), commitments to complete homework (Felkey et al., 2021) or schedule exit exams (Himmler et al., 2019), and limits on Internet use (Patterson, 2018). But to be effective, students must value commitment

devices sufficiently to use them. In the language of economists, there must be student demand for commitment devices. Previous studies offered a single type of contract to all treated students, leaving the nature of student demand for commitment contracts largely unknown. For instance, what behavioral characteristics of students predict demand for commitment devices? How much do students value commitment devices?

This study introduces “Study More Tomorrow,” a commitment device allowing college students to commit to changing future study habits. Signing the contract commits students to attend course-specific tutoring if their midterm score falls below a prespecified threshold. Failure to honor the contract leads to loss of a financial incentive, in this case, entries in a textbook scholarship lottery. We randomly assign an offer to enroll in Study More Tomorrow to students enrolled in introductory economics courses at Oregon State University. Offers also randomly varied the contract price (i.e., number of lottery entries lost for noncompliance).

We focus on demand for commitment for two reasons. First, for some students, changing study habits could be a necessary step in improving academic outcomes. Understanding study habits and which interventions influence them can set the foundation for broader efforts to improve outcomes for college students. Second, using behavioral principles to design interventions holds the promise of reaching students in particular need of support, due to their tendency to procrastinate or other behavioral biases. We also measure other student behaviors in addition to demand for commitment, including attention to messages about the intervention, tutoring attendance, and course grades.

Among students randomly assigned an offer to enroll in Study More Tomorrow, 10% accepted. To our knowledge, this is the first demonstration of willingness to pay for commitment among college students. Contrary to economic theory, acceptance of the commitment contract is not higher when its price is lower. A potential explanation for this result is that a lower contract price also means a lower commitment benefit of the contract. Students with the highest perceived utility for peer tutoring, according to their rating of the usefulness of tutoring at baseline, have greater demand for commitment, consistent with our model of contract demand. However, contrary to the model’s predictions, we fail to find evidence

of increased demand among present-biased students or among those with higher self-reported tendency to procrastinate. The contract does not robustly affect tutoring attendance or student course grades. Our results show that college students are willing to pay for study commitment devices. The sources of this demand do not align fully with behavioral theories, however, consistent with evidence from other populations (Carrera et al., 2022).

As with commitment demand, we find mixed evidence of the responses predicted by our model for attention to messages (measured by opening emails related to the experiment) and tutoring attendance. We fail to find robust evidence that the commitment contract offer influences course grades. The relatively low takeup of our simple commitment device and the null results for tutoring attendance and grades suggest caution when considering commitment devices as a strategy to promote college student success.

The name and structure of the program deliberately echo “Save More Tomorrow,” the seminal retirement savings commitment device (Thaler & Benartzi, 2004). Like that program, “Study More Tomorrow” attempts to leverage the likely behavioral biases in our study population. First, college students procrastinate. Yet college students may also be particularly likely to be aware of their tendency to procrastinate, leading to demand for commitment. Second, college students are loss averse; the original demonstration of the endowment effect involved college students trading (or failing to trade) coffee mugs (Kahneman et al., 1990). Endowing students with opportunities to win textbook scholarships attempts to channel this loss aversion.<sup>2</sup>

We build on previous studies of commitment devices among university students in three ways. First, we test if students are willing to pay in explicitly monetary terms (in expectation) for a commitment device. In contrast, Patterson (2018) and Himmler et al. (2019) offered “soft” commitment contracts that impose no penalty for noncompliance, Felkey et al. (2021) used social accountability, and Ariely and Wertenbroch (2002) penalized student grades. Laibson summarizes the existing literature as follows:

[E]xperimental participants who are willing to make commitments are rarely willing to pay to make those

commitments. In other words, some experimental participants are willing to restrict their choice set, but these subjects are usually not willing to pay for this privilege. (Laibson, 2018, p. 5)

Finding positive takeup of our commitment device therefore is notable. Second, we experimentally vary the contract price, allowing us to measure how price affects contract takeup. Third, none of the previous studies combined commitment devices with academic support. By contrast, we direct students who sign the commitment contract to tutoring, a promising intervention for college student success (Weiss et al., 2022).

### Model

We model a student's choice to sign a commitment contract, denoted by the indicator variable  $D$ , for studying. Without the commitment contract, the student's utility is

$$U(D=0) = \pi(\beta v - c) \quad (1)$$

where  $\pi$  is the student's subjective probability of studying later in the term;  $\beta$  is the hyperbolic discount rate, where  $\beta = 1$  represents time-consistent preferences and  $\beta < 1$  reflects time inconsistency (we assume  $\beta - \delta$  preferences [Laibson, 1997]), with  $\delta = 1$  for simplicity);  $v$  is the perceived value of studying; and  $c$  is the cost of studying. We normalize utility of not studying to zero.

Two parameters characterize the commitment contract:  $\Delta$ , the perceived increase in the probability of studying from signing the contract; and  $p$ , the contract price (in utils), paid only if the student reneges on the contract by not studying. Utility after signing the contract is

$$U(D=1) = (\pi + \Delta)(\beta v - c) - (1 - [\pi + \Delta])p. \quad (2)$$

The student signs the commitment contract if  $U(D=1) \geq U(D=0)$ . The necessary condition is

$$\frac{\Delta(\beta v - c)}{1 - (\pi + \Delta)} \geq p. \quad (3)$$

Several predictions follow from this condition. First, signing the contract is suboptimal if the student does not value it ( $\Delta = 0$ ).<sup>3</sup> Students who are unaware of their tendency to procrastinate

(“naifs”) and students who do not procrastinate should fall into this category. By contrast, students aware of their tendency to procrastinate (“sophisticates”) will be candidates to sign the contract, for sufficiently high  $\Delta$  (O'Donoghue & Rabin, 1999).

Second, contract demand will be increasing in the perceived value of studying  $v$ ; baseline probability of studying without the contract  $\pi$  (for  $\pi < 1$ ); and decreasing in the contract price  $p$ . All else equal, students with time-inconsistent preferences ( $\beta < 1$ ) will have lower demand for the contract. However, sophistication about this time inconsistency, represented by a higher value of  $\Delta$ , can mitigate this effect and lead time inconsistent students to demand the contract.

### Experiment

The study took place in introductory microeconomics and macroeconomics courses on the main campus of Oregon State University, the largest university in the state. These courses fulfill university requirements for 40 academic majors and 15 minors. Six course sections participated in the study, five in the winter quarter of 2020 and one in fall 2020. The final week of winter 2020 was conducted remotely due to the COVID-19 pandemic, while fall 2020 was entirely remote. We registered the experiment at the American Economic Association RCT Registry (AEARCTR-0005446; Pugatch et al., 2020). Registration preceded our analysis and listed contract takeup, tutoring attendance, and grades as primary outcomes.

All students in the participating sections were informed by their instructors during a class session of the “Study More Tomorrow” commitment contract. Instructors also told students they were entered into a lottery for two textbook scholarships per section, valued at \$80 each. All students were reminded of the lottery by email. The contract was a commitment to attend free peer tutoring for the course if the student scored below 80% on the midterm exam. The contract price was loss of chances to win the textbook scholarship if the student scored below the threshold but failed to attend peer tutoring by the end of the course.

In week 3 of the 10-week quarter, we randomly assigned students into three groups:

1. Control: no commitment contract offer.
2. Study More Tomorrow contract offer, half price.
3. Study More Tomorrow contract offer, full price.

The half and full price treatments refer to loss of half or all lottery chances if the contract was signed but not honored. We stratified treatment by class year, with equal probability of assignment to each group within strata. Students assigned to the contract offer were informed by email 1 to 2 weeks before the midterm exam (depending on each section's midterm schedule), with a reminder email in the following week. Emails explained the contract offer, with video link and signing deadline (Appendix Figure A1). Students who signed the contract but scored below 80% on the midterm were informed via email and reminded of their commitment to attend tutoring.

### Data and Results

The sample includes students who completed a baseline survey and consented to participate, resulting in a sample of 861 observations. The survey, conducted in the first 2 weeks of each term, asked students several questions related to our model of demand for study commitment. Students rated themselves on a scale from "very unlikely" to "very likely" to procrastinate, a measure of their sophistication and a proxy for  $\Delta$  in our model. Students also rated the usefulness of tutoring on a 5-point scale, a measure of  $\nu$ , with an additional option to report they were unsure. Students reported time preferences over hypothetical monetary rewards, which we code into a present bias dummy for students reporting time-inconsistent preferences, corresponding to  $\beta < 1$ . Finally, students reported the grade they expected to earn in the class.  $F$ -tests for the joint significance of these variables in predicting assignment to the treatment groups find no evidence of baseline imbalance ( $p$  values of 0.33 and 0.22 for the half and full price treatments compared to the control, respectively).

Figure 1 shows contract takeup by treatment arm. Eight percent of students who were offered the half-price treatment entered the contract. Among students who were offered the full-price

treatment, 11% entered the contract. There was no contamination of the control group. Our results show that college students are willing to pay for study commitment devices. To our knowledge, this finding is the first of its kind in the literature.

Although promising, these results also demonstrate the limitation of commitment devices. In our sample, nine of 10 students offered the contract did not sign. The scope of our commitment device to improve study habits or academic outcomes is therefore limited.

Table 1, column (1) formalizes these results via ordinary least squares (OLS) regressions of contract takeup on treatment, with controls for randomization strata and course section:

$$y_{is} = \alpha + \beta SMT_{is} + \theta X_{is} + \varepsilon_{is}, \quad (4)$$

where  $i$  indexes students;  $s$  indexes strata and course section;  $y$  is an outcome such as contract takeup;  $SMT$  is an indicator for random assignment to the Study More Tomorrow contract offer;  $X$  is a vector of controls for strata and course section; and  $\varepsilon$  is an error term. Other specifications add interactions between treatment and other characteristics, including the high-price contract offer and the survey measures we hypothesized to be correlated with demand for commitment. We report statistical significance using conventional  $p$  values (denoted by  $*$ ) and using  $q$  values (denoted by  $\dagger$ ), following the Benjamini et al. (2006) procedure to control the false discovery rate (FDR) when testing multiple hypotheses.<sup>4</sup>

The remainder of Table 1 analyzes student behavior throughout the experiment. Treatment does not predict opening the lottery announcement email (column 2), a measure of attention to the experiment. This is as expected, because the lottery announcement was sent to all students prior to treatment assignment, providing another check on baseline balance. The treatment coefficients in columns (2) and (3) show that approximately three of every five treated students opened the contract offer email and reminder, with no differential effect by contract price. We find no effect of the contract offer on midterm performance, final course grade, or attending tutoring after scoring below 80% on the midterm, that is, the commitment. (We focus on the contract offer because entering the contract is endogenous.

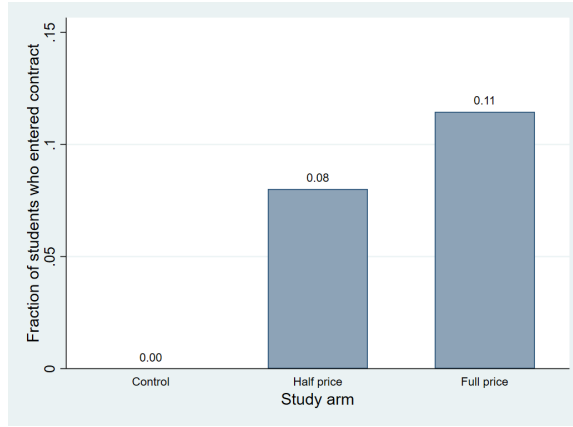


FIGURE 1. *Study More Tomorrow takeup.*

Among the 56 students who entered the contract, 30 scored below 80% on the midterm. Of these 30, five attended tutoring.)

In Table 1, Panel B, we fail to find evidence of greater demand when the contract carries a lower price. One potential explanation is that a lower contract price also means a lower commitment benefit of the contract. Although our results are noisy, the 95% confidence interval rules out declines of more than two percentage points in contract demand in response to doubling the contract price. Put another way, with 8% contract takeup at the low price, we can therefore bound the price elasticity of demand at  $\frac{\% \Delta Q}{\% \Delta P} = \frac{-25\%}{100\%} = -0.25$ , which is relatively

inelastic. Students in our sample were interested in the commitment contract, but not responsive to its price. This finding is consistent with other work showing that adding monetary incentives to tutoring nudges did not increase takeup (Pugatch and Wilson 2018, 2022).

Table 2 tests for heterogeneity in takeup. Column (1) regresses an indicator for entering the contract onto an indicator for being offered the high price, dummy variables for each category of baseline characteristics, and interactions between these variables and an indicator for having received any treatment. The contract offer  $\times$  high price interaction is positive and significant at 10%, but was not robust to the more parsimonious specification in Table 1. Students' perceived usefulness of tutoring and expected course

grade were also associated with takeup. Students who rated the usefulness of tutoring as a five out of five were 12 percentage points more likely to enter the contract than those who were unsure of tutoring's usefulness, significant at 5% and consistent with our model. Expecting an A or a B in the class increased the probability of entering the contract by 11 to 12 percentage points, compared to students who expected a C or lower. Although grade expectations do not enter our model, this result might reflect greater concern in the event of a low midterm grade among students expecting higher grades.

No other student characteristic had a statistically significant impact on takeup. Notably, neither present bias nor tendency to procrastinate was associated with demand for commitment, contrary to the model. Although surprising, these results are consistent with other findings on demand for commitment which contradict behavioral models (Carrera et al., 2022).

In the remainder of Table 2, we find that behavioral characteristics predict opening contract offer emails among the treatment group. Students who are present-biased or report being very likely to procrastinate are less likely to open the contract offer email, while students rating tutoring as least useful are less likely to open the contract reminder email.<sup>5</sup> Students who gave the highest rating to tutoring are more likely to open either contract email.

Treated students who rated tutoring as least useful scored 9 points lower on the midterm, significant

TABLE 1

*Main Results*

	Opened email					
	Signed contract	Lottery announcement	Contract offer	Contract reminder	Midterm score	Midterm <80%
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A						
Treated (any)	0.10***, ††† (0.01)	-0.01 (0.03)	0.64***, ††† (0.02)	0.58***, ††† (0.02)	0.5 (1.2)	0.00 (0.03)
Panel B						
treated (any)	0.08***, ††† (0.02)	-0.03 (0.04)	0.62***, ††† (0.03)	0.56***, ††† (0.03)	0.5 (1.3)	0.02 (0.04)
Treated $\times$ High price	0.04 (0.03)	0.03 (0.04)	0.03 (0.04)	0.05 (0.04)	0.1 (1.3)	-0.04 (0.04)
Observations	861	861	861	861	788	854
Control mean	0.00	0.67	0.00	0.00	70.3	0.65
Outcome mean	0.07	0.67	0.43	0.39	70.6	0.65

*Note.* Sample is all study participants, Winter 2020 and Fall 2020. Midterm score is average score for course sections with two midterms. Midterm <80% is indicator for at least one midterm score less than 80%. Midterm <80% set to zero for students who did not take any midterms. Midterm score and midterm <80% are missing for students who withdrew from course before midterm was administered. Sample for column (7) includes only students who scored below 80% on any midterm. Final grade in column (8) measured on 0–4 grade point scale. All regressions estimated using ordinary least squares (OLS) and include levels of baseline variables and dummies for strata and course section. Robust standard errors in parentheses.  $*p < .1$ .  $**p < .05$ .  $***p < .01$  based on conventional  $p$ -values.  $^{\dagger}q < .1$ .  $^{\dagger\dagger}q < .05$ .  $^{\dagger\dagger\dagger}q < .01$  based on sharpened  $q$  values (Benjamini et al., 2006).



TABLE 2

*Behavioral Heterogeneity*

	Opened email							Final grade
	Signed contract (1)	Lottery announcement (2)	Contract offer (3)	Contract reminder (4)	Midterm score (5)	Midterm <80% (6)	Tutoring visit if midterm <80% (7)	
Treated (any)	-0.02 (0.08)	-0.02 (0.23)	0.73***, ††† (0.16)	0.57***, †† (0.17)	-2.5 (7.3)	0.14 (0.21)	-0.49** (0.23)	0.45 (0.46)
Treated $\times$ High price	0.04* (0.03)	0.04 (0.04)	0.04 (0.04)	0.05 (0.04)	-1.2 (1.3)	-0.02 (0.04)	-0.03 (0.02)	-0.16** (0.08)
Present biased $\times$ Treated	0.02 (0.04)	-0.16 (0.10)	-0.11* (0.06)	0.01 (0.06)	-1.7 (3.0)	-0.05 (0.09)	-0.01 (0.07)	0.05 (0.20)
Unlikely to procrastinate $\times$ Treated	-0.06 (0.08)	-0.09 (0.16)	-0.12 (0.10)	0.03 (0.12)	1.4 (5.9)	-0.04 (0.17)	0.35* (0.21)	-0.20 (0.37)
Likely to procrastinate $\times$ Treated	-0.05 (0.08)	-0.17 (0.16)	-0.12 (0.10)	-0.01 (0.11)	2.1 (5.9)	-0.06 (0.17)	0.34 (0.21)	-0.28 (0.37)
Very likely to procrastinate $\times$ Treated	-0.08 (0.08)	0.04 (0.18)	-0.27** (0.12)	-0.06 (0.12)	4.1 (6.4)	-0.14 (0.19)	0.38* (0.21)	-0.11 (0.40)
Usefulness of tutoring: 1 $\times$ Treated	0.10 (0.13)	-0.15 (0.21)	0.03 (0.15)	-0.28* (0.16)	-9.1* (4.8)	0.15 (0.22)	0.16 (0.16)	-0.57 (0.40)
Usefulness of tutoring: 2 $\times$ Treated	0.07 (0.05)	0.12 (0.16)	-0.02 (0.09)	0.01 (0.09)	5.3 (5.6)	-0.06 (0.15)	0.07 (0.08)	0.34 (0.25)
Usefulness of tutoring: 3 $\times$ Treated	0.01 (0.03)	0.05 (0.11)	-0.01 (0.06)	-0.01 (0.07)	1.1 (3.5)	-0.03 (0.11)	-0.06 (0.06)	-0.19 (0.20)
Usefulness of tutoring: 4 $\times$ Treated	0.02 (0.03)	-0.04 (0.10)	-0.02 (0.06)	0.05 (0.06)	5.3 (3.2)	-0.13 (0.10)	-0.01 (0.07)	0.03 (0.20)

(continued)

TABLE 2. (continued)

	Opened email							
	Signed contract	Lottery	Contract offer		Contract	Midterm	Tutoring visit if midterm <80%	Final grade
		announcement		reminder	score			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Usefulness of tutoring: $5 \times$	0.12**	0.00	0.14**	0.17**	5.6	-0.13	0.06	0.24
Treated	(0.05)	(0.11)	(0.07)	(0.07)	(3.6)	(0.11)	(0.07)	(0.24)
Expected grade: $A \times$	0.11***,†††	0.10	0.01	-0.02	0.0	-0.03	0.16*	-0.12
Treated	(0.03)	(0.17)	(0.12)	(0.12)	(4.4)	(0.12)	(0.09)	(0.29)
Expected grade: $B \times$	0.12***,†††	0.18	0.07	-0.07	-3.9	0.07	0.16*	-0.36
Treated	(0.03)	(0.17)	(0.12)	(0.12)	(4.4)	(0.11)	(0.09)	(0.30)
Observations	861	861	861	861	788	854	559	764
Control mean	0.00	0.67	0.00	0.00	70.3	0.65	0.06	2.87
Outcome mean	0.07	0.67	0.43	0.39	70.6	0.65	0.05	2.84

Note. Sample is all study participants, Winter 2020 and Fall 2020. All right-hand side characteristics measured in baseline survey. Present biased is indicator for preferring \$100 today versus waiting one week to receive \$110, but preferring \$110 in 53 weeks versus \$100 in 52 weeks. Omitted categories: very unlikely to procrastinate; usefulness of tutoring “not sure”; expected grade C or below. Midterm score is average score for course sections with two midterms. Midterm <80% is indicator for at least one midterm score less than 80%. Midterm <80% set to zero for students who did not take any midterms. Midterm score and midterm <80% are missing for students who withdrew from course before midterm was administered. Sample for column (7) includes only students who scored below 80% on any midterm. Final grade in column (8) measured on 0 to 4 grade point scale. All regressions estimated using ordinary least squares (OLS) and include levels of baseline variables and dummies for strata and course section. Robust standard errors in parentheses.

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$  based on conventional  $p$  values. † $q < .1$ . †† $q < .05$ . ††† $q < .01$  based on sharpened  $q$  values (Benjamini et al., 2006).



at 10%. Neither treatment nor its interactions predict scoring below 80% on the midterm. The interaction between treatment and the high-priced contract is negative and significant for final course grade, but the treatment plus interaction sum is not statistically distinguishable from zero ( $p = 0.54$ ), suggesting no robust effect on academic performance. We find mixed evidence of the predicted responses for tutoring attendance after scoring below 80% on the midterm. The large negative coefficient on treatment corresponds to observations with interaction terms all equal to zero. (The treatment coefficient in isolation [as in column 1] is  $-0.02$  (s.e.  $0.02$ ).) Treated students who report being very likely to procrastinate are more likely to attend tutoring, consistent with sophistication. Yet the response is nearly identical among treated students who report being unlikely to procrastinate. Although these students may be less naïve than the omitted “very unlikely to procrastinate” group, they also do not report self-control problems as do sophisticates. Finally, treated students expecting A or B are more likely to attend tutoring if they score below 80%, consistent with the treatment making their need to study more salient in response to lower-than-expected grades.

A caveat for all interaction results is that the experiment may have limited power to detect heterogeneous effects; in several cases, results significant using conventional  $p$  values are not significant using  $q$  values to adjust for multiple hypotheses.

## Conclusion

We designed a commitment device for college students, “Study More Tomorrow,” and conducted a randomized controlled trial testing a model of its demand. Our results reveal positive demand for “Study More Tomorrow,” with 10% of students accepting the randomized contract offer, all of whom paid a monetary price in expectation. We find several surprising results when predicting demand. Future research should further explore demand for and the effects of commitment contracts among students along different dimensions, such as course subject or difficulty, incentives or costs associated with the contract (for instance, cash or course credit), and modality of instruction.

More broadly, the results help place commitment devices in proper context among efforts to promote college student success. Our results reveal that some students value commitment devices enough to sacrifice something in exchange, but that this valuation is limited to a small proportion of students. In contrast to previous studies demonstrating positive effects of commitment devices on academic outcomes, we fail to find changes in tutoring attendance or course grades. At best, commitment devices should be one component of a multidimensional effort to increase engagement and improve outcomes among college students (Flaschen et al., 2023; Weiss et al., 2022).

## Appendix

### Register now for Study More Tomorrow in your ECON 201 course!

1 message

OSU Economics <todd.pugatch@oregonstate.edu>  
To: todd.pugatch@oregonstate.edu

Wed, Oct 14, 2020 at 10:00 AM

Having trouble reading this? To view this email as a web page, [click here](#).

Hello Todd,

The Economics Department is offering **Study More Tomorrow**, a tool to help you commit to studying in ECON 201.

- **How does it work?** If you score below 80% on any midterm, you commit to go to the Economics Tutoring Lab at least once before the term ends. (Tutoring is free.)
- **What happens if I score below 80% on the midterm and don't visit the tutoring lab?** You lose all ten of your entries in a lottery for a textbook scholarship in this course. (Two scholarships per qualifying section. We sent you an email about this lottery on October 7.)
- **What do I do now?** Follow this link to learn more and choose whether to participate in **Study More Tomorrow**. The deadline to participate is Friday, October 23.

[Find out more!](#)

or click on this link: [https://oregonstate.qualtrics.com/jfe/form/SV\\_d7nV8wV9DwpGDsh?Q\\_DL=hYwAAPUFZEU4Glp\\_d7nV8wV9DwpGDsh\\_MLRP\\_8pj9SiGDjhI3qUR&Q\\_CHL=gl](https://oregonstate.qualtrics.com/jfe/form/SV_d7nV8wV9DwpGDsh?Q_DL=hYwAAPUFZEU4Glp_d7nV8wV9DwpGDsh_MLRP_8pj9SiGDjhI3qUR&Q_CHL=gl)

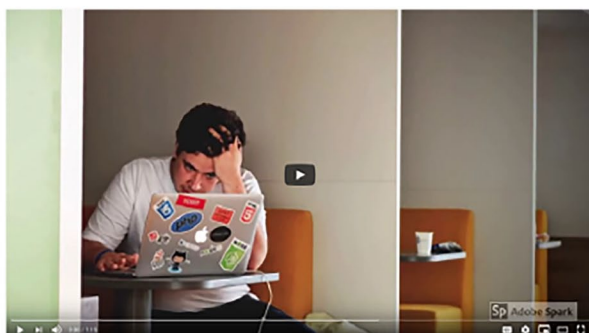


FIGURE A1. *Study more tomorrow contract offer.*

### Acknowledgments

The authors thank Jon Chesbro, Camille Nelson, Mike Nelson, Beau Olen, Laura Relyea, and Gail Udell for their assistance. Research with human subjects approved by Oregon State University Institutional Review Board, Study 8402. This experiment is registered at the AEA RCT Registry, study AEARCTR-0005446; Pugatch, Schroeder and Wilson 2020.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Financial support provided by Oregon State University via an FY19 Individual Learning Innovation Grant.

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## Notes

1. Outside education, researchers have offered commitment contracts to encourage savings (Ashraf et al., 2006; Thaler & Benartzi, 2004) or promote healthy behaviors (Rogers et al., 2014).

2. Students appeared to value their chances in the textbook scholarship lottery. For instance, in response to the email notification of the lottery, one student replied, “Thank you [author name], this really would help me out.” This view is consistent with consumers’ greater valuation of probabilistic free price promotions compared to sure discounts of equivalent expected value (Mazar et al., 2017). Nonetheless, larger or more tangible potential losses may have yielded a stronger sense of loss aversion.

3. One reason students may not value the contract is because they are certain they will study later in the term ( $\pi = 1$ ), leaving no scope for the contract to increase their likelihood of studying. We thank an anonymous referee for suggesting this possibility.

4. The  $q$  value is analogous to the conventional  $p$  value when controlling the FDR at level  $q$ . For instance, a  $q$  value of .05 means the null hypothesis would be rejected only when permitting the FDR to be no less than 5%. We calculate  $q$  values within the set of hypotheses reported in each results table.

5. These results suggest that perceived usefulness of tutoring may also correlate positively with other traits, such as conscientiousness or agreeableness.

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Manuscript received May 8, 2023

Revision received September 20, 2023

Accepted November 3, 2023