

Appendix A: hypothesis tests

This appendix describes in greater detail the hypotheses we test for Equations (6)-(9), our main estimating equations. We follow an analysis plan submitted prior to analyzing the data (Pugatch and Wilson 2018a).

We test the following hypotheses from Equation (6):

$$takeup_{ijk} = \alpha + \beta_1 message_{ijk} + \beta_2 incentive_{ijk} + X'_{ij(-k)} \Omega + \gamma_j + \varepsilon_{ijk} \quad (6)$$

1. $\beta_1 = 0$,
2. $\beta_2 = 0$,
3. $\beta_1 + \beta_2 = 0$.

The first hypothesis is that receiving any message (in the absence of an incentive) increases take-up. The second hypothesis is that receiving an incentive offer increases take-up above and beyond any effect of the non-incentive component of the message. The third hypothesis is that the combined effect of the message and the incentive is greater than zero. We estimate Equation (6) separately for each of the three services and test each of these hypotheses for each of the three services.

We test the following hypotheses for Equation (7):

$$takeup_{ijk} = \alpha + \beta_1 email_{ijk} + \beta_2 text_{ijk} + \beta_3 emailincentive_{ijk} + \beta_4 textincentive_{ijk} + X'_{ij(-k)} \Omega + \gamma_j + \varepsilon_{ijk} \quad (7)$$

1. $\beta_1 = 0$,
2. $\beta_2 = 0$,
3. $\beta_3 = 0$,
4. $\beta_4 = 0$,
5. $\beta_1 + \beta_3 = 0$,
6. $\beta_2 + \beta_4 = 0$,
7. $\beta_1 = \beta_3$,

8. $\beta_2 = \beta_4$,
9. $\beta_1 + \beta_3 = \beta_2 + \beta_4$,
10. $\beta_1 + \beta_3 = 0$ and $\beta_2 + \beta_4 = 0$ (jointly).

The first hypothesis is that receiving any email (in the absence of an incentive) increases take-up. The second hypothesis is that receiving any text (in the absence of an incentive) increases take-up. The third hypothesis is that receiving an email incentive offer increases take-up above and beyond any effect of the non-incentive component of the message. The fourth hypothesis is that receiving a text incentive offer increases take-up above and beyond any effect of the non-incentive component of the message. The fifth hypothesis is that the combined effect of the email message and the incentive is greater than zero. The sixth hypothesis is that the combined effect of the text message and the incentive is greater than zero. The (null version of the) seventh hypothesis is that the effect of any email is equal to the effect of any text. The (null version of the) eighth hypothesis is that the effect of any email incentive is equal to the effect of any text incentive. The (null version of the) ninth hypothesis is that the combined effect of any email and the incentive is equal to the combined effect of any text and the incentive. The (null version of the) tenth hypothesis is that the combined effect of any email and the incentive is equal to zero and the combined effect of any text and the incentive is equal to zero. We estimate Equation (7) separately for each of the three services and test each of these hypotheses for each of the three services.

We test the following hypotheses from Equation (8):

$$takeup_{ijk} = \alpha + \beta_1 week3_{ijk} + \beta_2 week6_{ijk} + \beta_3 week9_{ijk} + X'_{ij(-k)} \Omega + \gamma_j + \varepsilon_{ijk} \quad (8)$$

1. $\beta_1 = 0$,
2. $\beta_2 = 0$,
3. $\beta_3 = 0$,
4. $\beta_1 = \beta_2$,

$$5. \beta_1 = \beta_3,$$

$$6. \beta_2 = \beta_3$$

The first hypothesis is that receiving a message (of any form) in Week 3 increases take-up. The second hypothesis is that receiving a message (of any form) in Week 6 increases take-up. The third hypothesis is that receiving a message (of any form) in Week 9 increases take-up. The fourth hypothesis is that being assigned to receive any message in Week 3 has the same effect on take-up as being assigned to receive any message in Week 6. The fifth hypothesis is that being assigned to receive any message in Week 3 has the same effect on take-up as being assigned to receive any message in Week 9. The sixth hypothesis is that being assigned to receive any message in Week 6 has the same effect on take-up as being assigned to receive any message in Week 9.

We test the following hypotheses from Equation (9):

$$\begin{aligned} takeup_{ijk} = & \alpha + \beta_1 onemessage_{ijk} + \beta_2 twomessages_{ijk} + \beta_3 threemessages_{ijk} + X'_{ij(-k)} \Omega + \gamma_j \\ & + \varepsilon_{ijk} \end{aligned} \quad (9)$$

$$1. \beta_1 = 0,$$

$$2. \beta_2 = 0,$$

$$3. \beta_3 = 0,$$

$$4. \beta_1 + \beta_2 = 0,$$

$$5. \beta_1 + \beta_2 + \beta_3 = 0$$

The first hypothesis is that receiving one message (of any form) increases take-up. The second hypothesis is that receiving two messages (of any form) increases take-up compared to receiving only one message. The third hypothesis is that receiving three messages (of any form) increases take-up compared to receiving only two messages. The fourth hypothesis is that being assigned to receive two messages has the same

effect on take-up as being in the control group (zero messages). The fifth hypothesis is that being assigned to receive three messages has the same effect on take-up as being in the control group (zero messages).

Appendix B: student surveys**B.1: baseline survey**

1. Have you declared a major?
 - a. Yes
 - b. No
 - c. Unsure

2. What is your intended major?
 - a. Economics
 - b. Liberal Arts (other than Economics)
 - c. Engineering
 - d. Business
 - e. Science
 - f. Other

3. What is your intended minor?
 - a. No intended minor
 - b. Economics
 - c. Other
 - d. Unsure if I will take a minor

4. On a scale of 0-100, how likely are you to major in economics? (0=definitely not, 100=definitely yes, 50=50% chance, etc.)

5. On a scale of 0-100, how likely are you to minor in economics? (0=definitely not, 100=definitely yes, 50=50% chance, etc.)

6. Thinking about the Economics major, what is its single biggest appeal to you?
 - a. Leads to a fulfilling career
 - b. Leads to more future income
 - c. Prestigious
 - d. Increases chance of admission to graduate school
 - e. Fun to study
 - f. Other

7. Thinking about the Economics major, what is its single biggest drawback for you?
 - a. Too difficult because of math
 - b. Too difficult for reason besides math
 - c. Too focused on making money
 - d. Lack of diversity in faculty who teach Economics
 - e. Lack of diversity in students who study Economics
 - f. Too boring or not relevant to my life
 - g. Other

8. Prior to this course, how many economics courses have you taken in college? (Include courses from previous terms only. Do not include this course or courses in which you are currently enrolled.)
9. What is your best guess of how much the median economics graduate earns in their first year after graduation?
 - a. Less than \$30,000
 - b. \$30,000-\$35,000
 - c. \$35,001-\$40,000
 - d. \$40,001-\$45,000
 - e. \$45,001-\$50,000
 - f. More than \$50,000
10. What is your best guess of how much the median economics graduate earns 15 years after graduation?
 - a. Less than \$50,000
 - b. \$50,000-\$60,000
 - c. \$60,001-\$70,000
 - d. \$70,001-\$80,000
 - e. \$80,001-\$90,000
 - f. \$90,001-\$100,000
 - g. More than \$100,000
11. Before taking a midterm exam, do you usually know your current grade in a course?
 - a. Yes, always
 - b. Yes, but only if the professor reports it
 - c. No
 - d. Depends on the course
12. Before taking a midterm exam, do you usually know what score you need to achieve a final grade higher than your current grade?
 - a. Yes, always
 - b. Yes, but only if the professor reports it
 - c. No
 - d. Depends on the course
13. For a typical course, when do you usually begin studying for an exam?
 - a. The night before
 - b. The week before
 - c. More than a week before
14. Suppose you encounter difficulties in a course. You try studying harder but still do not improve your performance. What is the next strategy you will take to improve your grade?
 - a. Visit office hours
 - b. Study with friends or classmates
 - c. Find a peer tutor (if available for free)
 - d. Seek academic coaching/study skills help
 - e. None of these; I keep studying on my own
15. Suppose you encounter difficulties in a course. If free peer tutoring were available, how likely would you be to use it?
 - a. Definitely wouldn't use

- b. Unlikely to use
 - c. Not sure if I would use or not
 - d. Might use
 - e. Definitely would use
16. Suppose you encounter difficulties in a course. If free academic coaching were available, how likely would you be to use it?
- a. Definitely wouldn't use
 - b. Unlikely to use
 - c. Not sure if I would use or not
 - d. Might use
 - e. Definitely would use
17. What is your expected grade in this course?
- a. A
 - b. B
 - c. C
 - d. D
 - e. F

Appendix B.2: endline survey

1. Have you declared a major?
- a. Yes
 - b. No
 - c. Unsure
2. What is your intended major?
- a. Economics
 - b. Liberal Arts (other than Economics)
 - c. Engineering
 - d. Business
 - e. Science
 - f. Other
3. What is your intended minor?
- a. No intended minor
 - b. Economics
 - c. Other
4. On a scale of 0-100, how likely are you to major in economics? (0=definitely not, 100=definitely yes, 50=50% chance, etc.)
5. On a scale of 0-100, how likely are you to minor in economics? (0=definitely not, 100=definitely yes, 50=50% chance, etc.)
6. Thinking about the Economics major, what is its single biggest appeal to you?
- a. Leads to a fulfilling career

- b. Leads to more future income
 - c. Prestigious
 - d. Increases chance of admission to graduate school
 - e. Fun to study
 - f. Other
7. Thinking about the Economics major, what is its single biggest drawback for you?
 - a. Too difficult because of math
 - b. Too difficult for reason besides math
 - c. Too focused on making money
 - d. Lack of diversity in faculty who teach Economics
 - e. Lack of diversity in students who study Economics
 - f. Too boring or not relevant to my life
 - g. Other
8. Before taking this survey, had you seen the video "[A career in Economics...it's much more than you think](#)"?
 - a. Yes
 - b. No
9. What is your best guess of how much the median economics graduate earns in their first year after graduation?
 - a. Less than \$30,000
 - b. \$30,000-\$35,000
 - c. \$35,001-\$40,000
 - d. \$40,001-\$45,000
 - e. \$45,001-\$50,000
 - f. More than \$50,000
10. What is your best guess of how much the median economics graduate earns 15 years after graduation?
 - a. Less than \$50,000
 - b. \$50,000-\$60,000
 - c. \$60,001-\$70,000
 - d. \$70,001-\$80,000
 - e. \$80,001-\$90,000
 - f. \$90,001-\$100,000
 - g. More than \$100,000
11. Prior to taking this survey, were you aware of the following free services? (Check all that apply.)
 - a. Extra practice problems on Canvas
 - b. Office hours
 - c. Economics Tutoring Lab
 - d. Academic Coaching at the Academic Success Center
12. Think about times during this term when you have spent more time than usual on this course (for instance, studying for an exam). How did you add this extra time into your schedule? Choose the answer that accounts for the largest amount of your extra time, even if several answers are possible.
 - a. Studied less in other classes

- b. Slept less
- c. Reduced time in other activities besides sleep (for instance, leisure time, time at a job, or hygiene/household maintenance)
- d. I didn't spend any extra time on this class

13. What is your expected grade in this course?

- a. A
- b. B
- c. C
- d. D
- e. F

Appendix C: structural estimation details

From Equation (10), the choice-specific value functions are:

$$\begin{aligned} V(1) &= -c + \delta(1 + \theta)\underline{y} + \varepsilon_1 \\ &= -c + \delta(1 + [b + m\tau_b])\underline{y} + \varepsilon_1 \end{aligned} \quad (\text{A1})$$

$$V(0) = \delta\underline{y} + \varepsilon_0 \quad (\text{A2})$$

The net value of using an academic support service is therefore:

$$V(1) - V(0) = -c + \delta(b + m\tau_b)\underline{y} + (\varepsilon_1 - \varepsilon_0) \quad (\text{A3})$$

The student uses the service if this net value in (A3) weakly exceeds zero, $D=1[V(1) - V(0)] \geq 0$). Under the assumption of Type I Extreme Value errors with scale parameter $\sigma=1$, the corresponding probability takes the logit form:

$$\Pr(D = 1) = \frac{\exp[-c + \delta(b + m\tau_b)\underline{y}]}{1 + \exp[-c + \delta(b + m\tau_b)\underline{y}]} \quad (\text{A4})$$

The corresponding log likelihood function is:

$$\ln L = \sum_{i=1}^n D_i \ln \Pr(D_i = 1) + (1 - D_i) \ln(1 - \Pr(D_i = 1)) \quad (\text{A5})$$

To estimate the parameters of the likelihood function using (A5), we calibrate $\delta=0.95$ and b . We use $b=0.001$, $b=0.01$, or $b=0.1$, depending on the specification. Grades \underline{y} are equal to observed grades if $D=0$, or observed grades discounted by $1/(1+b)$ if $D=1$.

We replace m with Z in order to rely on the random variation induced by the experiment. We then choose c and τ_b to maximize the likelihood function (A5). The value of τ_b obtained in this procedure is analogous to the intent to treat (ITT), as it relies directly on variation in random assignment to advertising

messages. We convert this estimate to a local average treatment effect (LATE) by scaling it by the share of compliers with the intervention, i.e., by dividing by $\Delta m(Z)$.

Figure A1(a): Coaching email, with incentive

Jon Chesbro <jon.chesbro@oregonstate.edu> Thu, Jan 24, 2019 at 3:00 PM
To: todd.pugatch@oregonstate.edu

Having trouble reading this? To view this email as a web page, click here.



Hi Todd,

I wanted to share important information about a free service available to refine your study strategies.

Academic Coaches are trained to improve your academic performance. Your coach will work with you to meet your goals. Coaching at the Academic Success Center (ASC) is free.

Watch a short video on Academic Coaching [here](#).

Next step:

- Come to the ASC main office at [125 Waldo](#) to schedule a coaching appointment or to speak with an ASC Strategist about your academic success.

or

- Set up a coaching appointment [online](#).

Prizes!

Meet with your Academic Coach at the ASC within two weeks of this message and you will be entered into a lottery to win \$250 Orange Cash.

Sincerely,
Jon Chesbro
Instructor, Economics

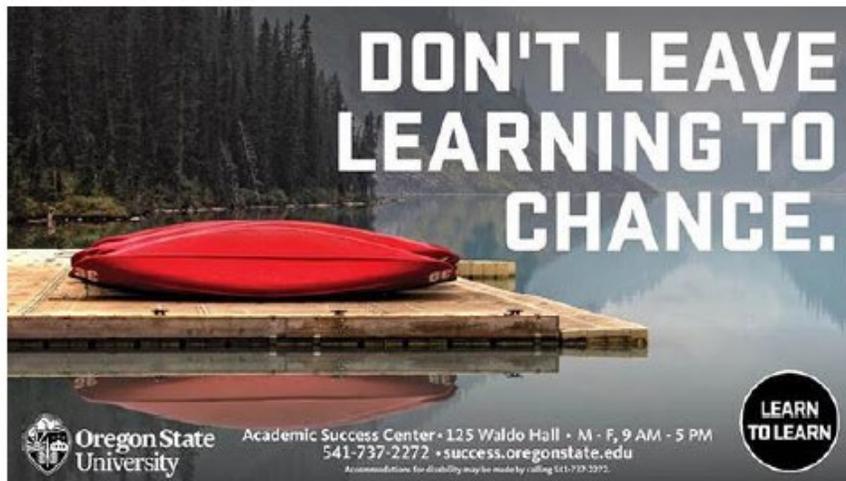


Figure A1(b): Tutoring email, with incentive

ECON 201: Free Economics tutoring at the Economics Undergraduate Lab

2 messages

Jon Chesbro <jon.chesbro@oregonstate.edu>
To: todd.pugatch@oregonstate.edu

Mon, Mar 4, 2019 at 3:00 PM

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



Hi Todd,

I wanted to share important information about a free service available to refine your study strategies.

The Economics Undergraduate Lab offers free tutoring. Your tutor will work with you to meet your goals. Tutoring at the Economics Undergraduate Lab is free.

Next step:

- Come to the Economics Undergraduate Lab at Bexell Hall, Room 100H, Monday-Thursday 10am-5pm, Friday 10am-4pm.

Note that there is no tutoring during finals week!

Prizes!

Visit the Economics Undergraduate Lab within two weeks of this message and you will be entered into a lottery to win \$250 Orange Cash.

Sincerely,
Jon Chesbro
Instructor, Economics



Figure A1(c): Practice email, with incentive

ECON 201: Now available - practice problems on Canvas

2 messages

Jon Chesbro <jon.chesbro@oregonstate.edu>
To: todd.pugatch@oregonstate.edu

Thu, Jan 24, 2019 at 3:00 PM

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

Hi Todd,

Completing extra practice problems can be one of the most effective ways to prepare for your Economics exams.

Extra practice problems for all chapters are available on Canvas.

Next step:

- Access practice problems on Canvas. Go to Quizzes → Practice for (Midterm/Final) Exam.

Prizes!

Attempt practice problems within two weeks of this message and you will be entered into a lottery to win \$250 Orange Cash.

Sincerely,
Jon Chesbro
Instructor, Economics



Figure A2(a): Coaching text, with incentive

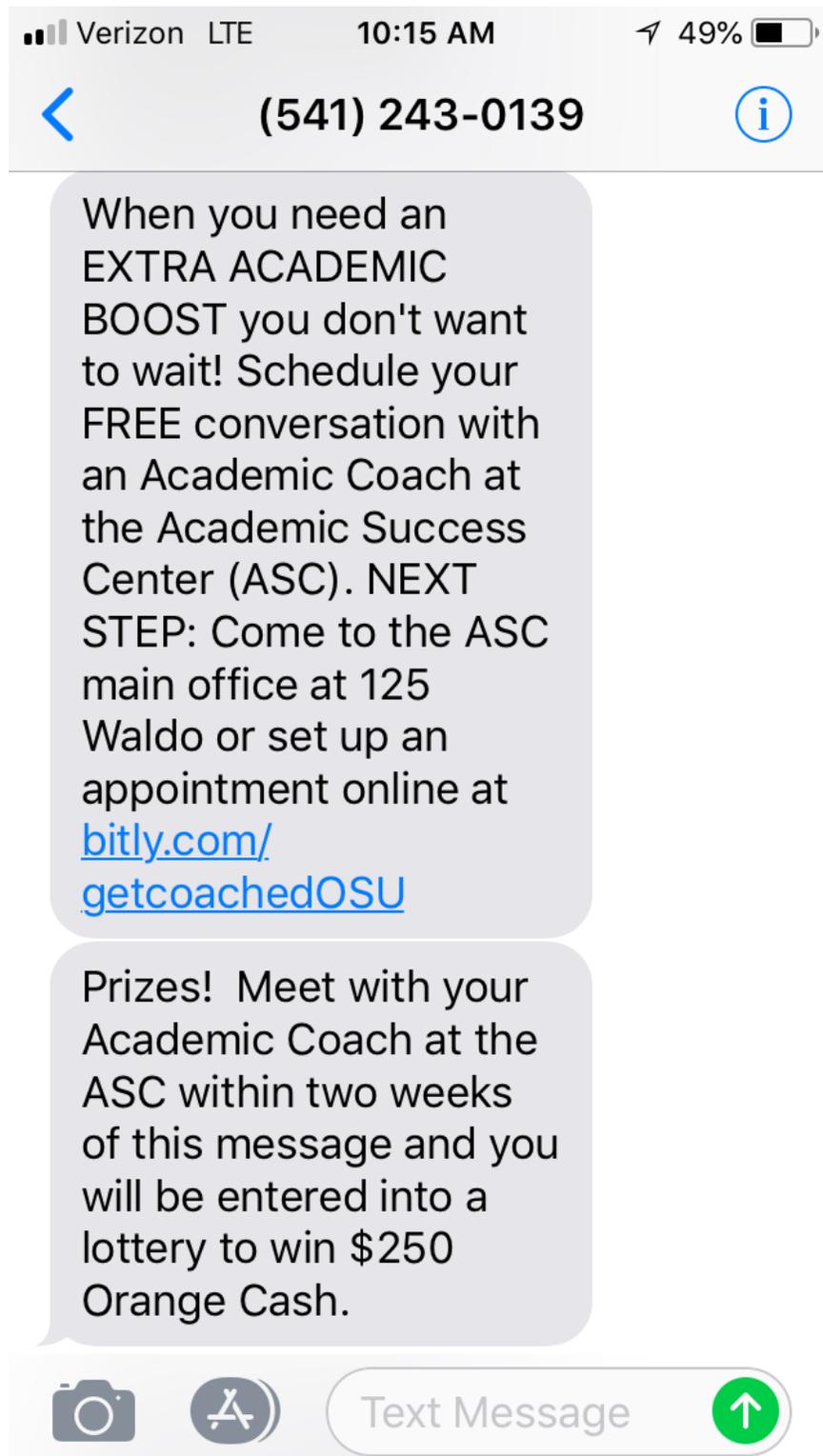


Figure A2(b): Tutoring text, with incentive

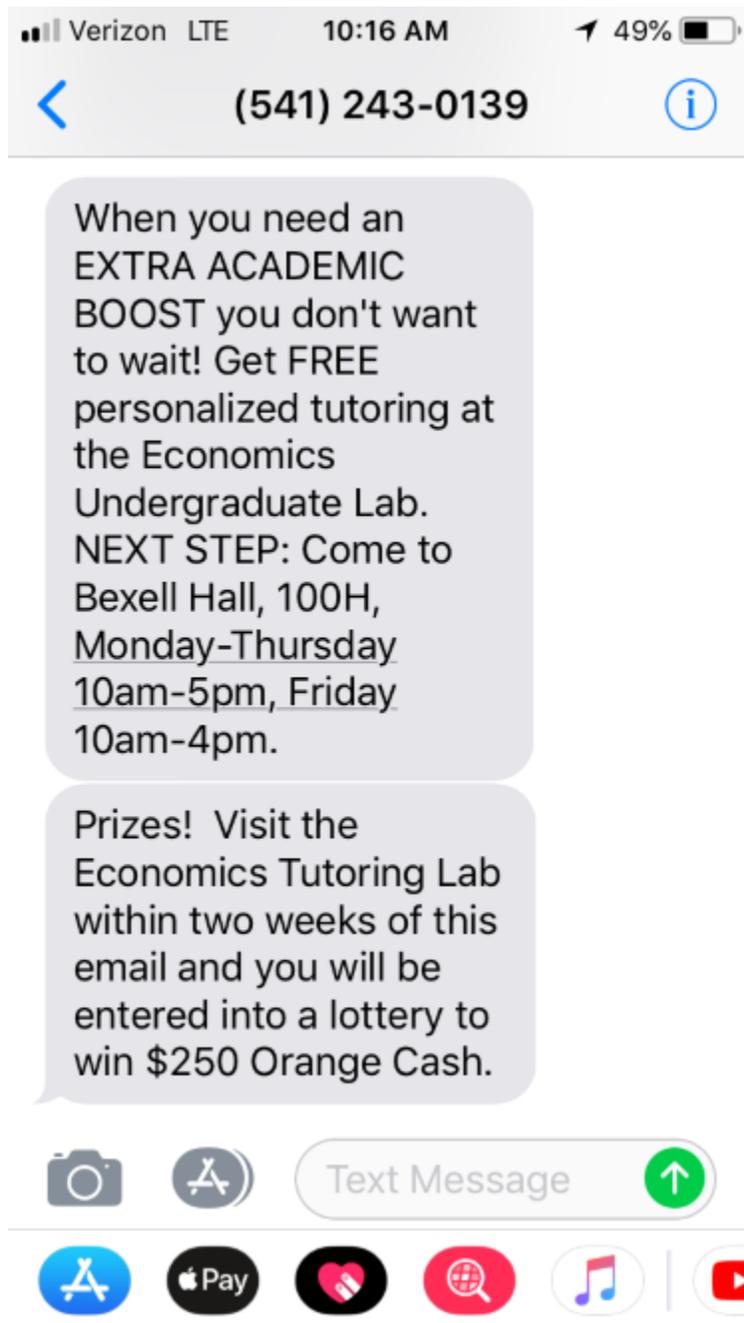


Figure A2(c): Practice text, with incentive

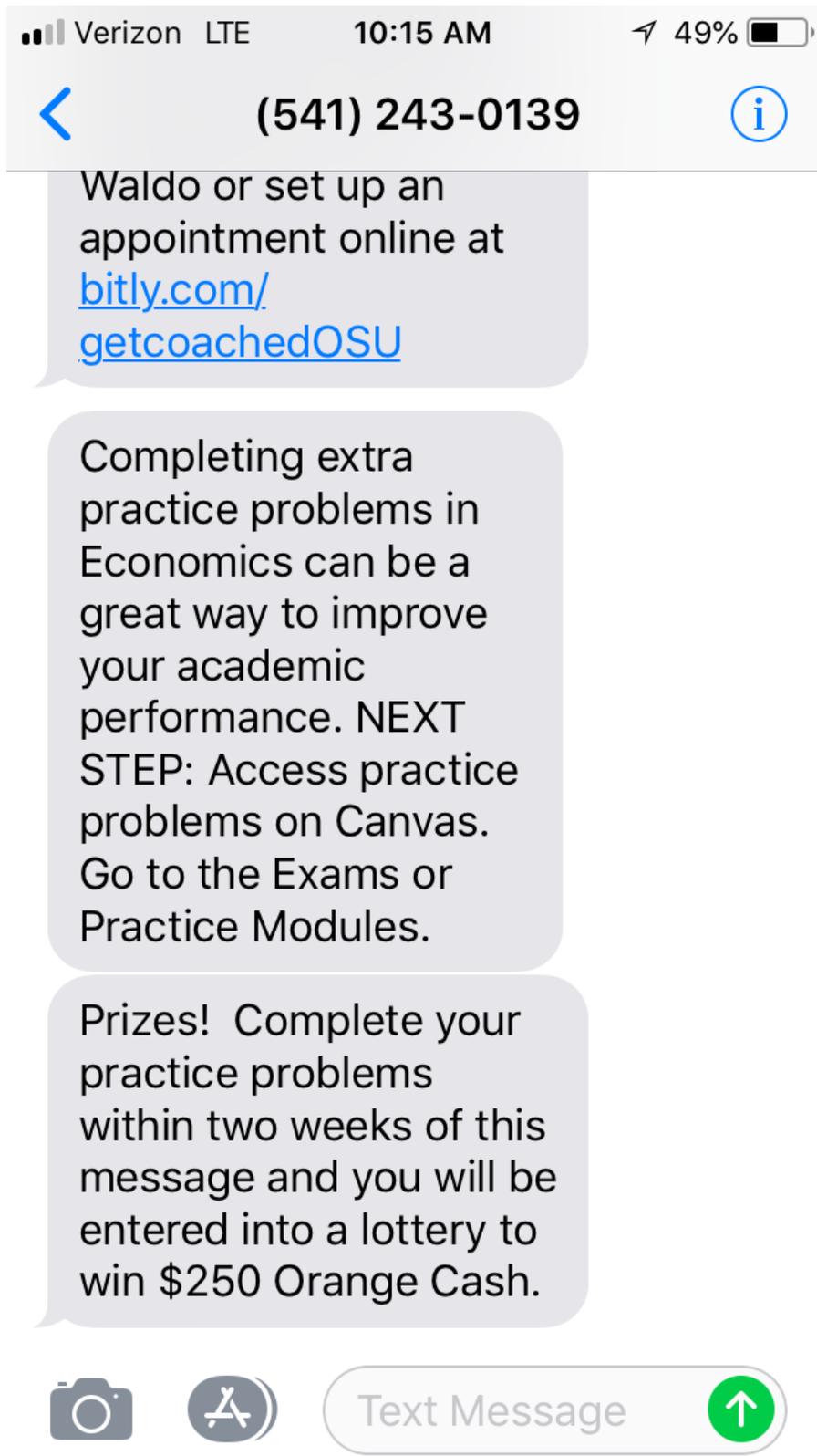


Table A1: Academic service use, message timing, and message frequency

	any service use				multiple service use			
	coaching	tutoring	practice problems	student x service panel	coaching	tutoring	practice problems	student x service panel
<u>message timing/frequency</u>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Week 3	-0.015 (0.014)	-0.041 (0.029)	-0.037 (0.036)	-0.033 (0.022)**	0.000 (0.001)	-0.030 (0.018)*	-0.017 (0.042)	-0.019 (0.013)
Week 6	-0.016 (0.012)	-0.023 (0.024)	-0.015 (0.037)	-0.019 (0.014)	0.000 (0.000)	-0.034 (0.016)**	-0.039 (0.042)	-0.026 (0.013)**
Week 9	-0.020 (0.010)**	-0.016 (0.021)	0.008 (0.040)	-0.011 (0.014)	0.000 (0.001)	-0.022 (0.013)*	0.012 (0.045)	-0.007 (0.013)
one message	0.017 (0.013)	0.027 (0.027)	0.020 (0.040)	0.029 (0.014)**	-0.002 (0.002)	0.024 (0.016)	0.017 (0.046)	0.020 (0.014)
two messages	0.021 (0.019)	0.011 (0.035)	0.032 (0.044)	0.022 (0.018)	0.000 (0.001)	0.044 (0.025)*	0.056 (0.051)	0.035 (0.017)**
N	2,119	2,119	2,119	6,357	2,119	2,119	2,119	6,357
control mean	0.013	0.059	0.939	0.340	0.002	0.022	0.903	0.310
H1: Week 3 = Week 6	0.95	0.51	0.36	0.27	0.99	0.82	0.47	0.52
H2: Week 3 = Week 9	0.71	0.36	0.08	0.09	0.77	0.65	0.33	0.30
H3: Week 6 = Week 9	0.71	0.77	0.38	0.52	0.78	0.43	0.11	0.09
H4: one message + two messages	0.15	0.46	0.49	0.08	0.30	0.05	0.39	0.04
H5: Week 3 + Week 6 + Week 9 (three messages)	0.06	0.18	0.67	0.08	0.71	0.01	0.70	0.13

Sample is all participants, AY2018-2019. Treatment corresponds to service measured as outcome, i.e., Week 3 refers to coaching message in Week 3 when coaching is the outcome. One message refers to at least one coaching message when coaching is the outcome. Variables defined additively, so that a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one, and a student assigned two messages would have the "one message" and "two message" indicators equal to one. Regressions in columns 1-3, 5-7 also control for timing and frequency of messages for other services. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. p-values of hypothesis tests reported at bottom of table. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A2: Message take-up and service awareness, with additional hypothesis tests

	<u>opened</u> <u>email</u>	<u>clicked</u> <u>link</u>	<u>coaching</u>	<u>tutoring</u>	<u>awareness</u> <u>practice</u> <u>problems</u>	<u>student-service</u> <u>panel</u>
	(1)	(2)	(3)	(4)	(5)	(6)
<u>Panel A: incentive</u>						
message	0.662 (0.018)***	0.005 (0.003)*	0.007 (0.040)	0.056 (0.034)	0.065 (0.034)*	0.051 (0.018)***
message*incentive	0.023 (0.026)	0.007 (0.005)	0.020 (0.047)	0.011 (0.040)	0.005 (0.040)	-0.003 (0.024)
N	1,812	1,812	1,838	1,838	1,838	5,514
control mean	0.00	0.00	0.54	0.70	0.72	0.65
message + incentive (p-value)	0.00	0.01	0.51	0.06	0.05	0.01
<u>Panel B: message timing</u>						
Week 3	0.406 (0.022)***	0.003 (0.004)	0.028 (0.039)	0.067 (0.034)**	-0.052 (0.034)	0.013 (0.020)
Week 6	0.183 (0.022)***	0.011 (0.004)***	0.012 (0.038)	-0.008 (0.034)	0.090 (0.032)***	0.033 (0.019)*
Week 9	0.324 (0.022)***	0.003 (0.004)	-0.005 (0.040)	0.047 (0.033)	0.095 (0.032)***	0.048 (0.020)**
N	1,812	1,812	1,838	1,838	1,838	5,514
control mean	0.00	0.00	0.54	0.70	0.72	0.65
H1: Week 3 = Week 6	0.00	0.09	0.79	0.15	0.01	0.53
H2: Week 3 = Week 9	0.02	0.97	0.60	0.70	0.01	0.27
H3: Week 6 = Week 9	0.00	0.18	0.79	0.30	0.94	0.63
<u>Panel C: message frequency</u>						
at least one message	0.587 (0.021)***	0.004 (0.003)	-0.016 (0.043)	0.041 (0.036)	0.053 (0.037)	0.024 (0.019)
at least two messages	0.176 (0.028)***	0.006 (0.005)	0.055 (0.050)	0.029 (0.043)	0.001 (0.043)	0.035 (0.026)
three messages	-0.001 (0.038)	0.009 (0.011)	-0.001 (0.070)	0.037 (0.060)	0.137 (0.053)***	0.044 (0.036)
N	1,812	1,812	1,838	1,838	1,838	5,514
control mean	0.00	0.00	0.54	0.70	0.72	0.65
H4: at least two messages (total effect)	0.00	0.02	0.35	0.06	0.14	0.00
H5: three messages (total effect)	0.00	0.09	0.55	0.06	0.00	0.00
<u>Panel D: message medium</u>						
email			0.119 (0.086)	0.119 (0.071)*	0.133 (0.072)*	0.116 (0.041)***
text			-0.092 (0.080)	0.080 (0.080)	-0.091 (0.083)	-0.041 (0.042)
email, with incentive			-0.066 (0.106)	0.045 (0.085)	-0.007 (0.087)	-0.035 (0.052)
text, with incentive			0.015 (0.108)	0.054 (0.096)	0.200 (0.097)**	0.058 (0.057)
N			737	737	737	2,211
control mean			0.47	0.61	0.70	0.59
H5: email + incentive			0.52	0.02	0.06	0.02
H6: text + incentive			0.39	0.08	0.11	0.68
H7: email = text			0.05	0.68	0.03	0.01
H8: email incentive = text incentive			0.59	0.94	0.12	0.23
H9: email + incentive = text + incentive			0.23	0.73	0.83	0.22
H10: email + incentive = 0, text + incentive = 0			0.49	0.03	0.09	0.07

Sample is all participants in study, academic year 2018-2019. Exception is Panel D, which includes only those eligible for text message treatment. Data on email outcomes is administrative. Awareness outcomes are self-reports from endline survey. Regressions for opened email and clicked link (columns 1-2) exclude those randomly assigned to receive text messages. Regressions for service-specific awareness (columns 3-5) report coefficient on message

specific to that service. For example, the table reports the coefficient on the tutoring message when tutoring is the outcome. Variables defined additively, so that in Panel B a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one. In Panel C, a student assigned two messages would have the "one message" and "two message" indicators equal to one, while a student assigned to three messages would have all message frequency indicators set to one. Regressions in columns 3-5 also control for timing or frequency of messages for other services in Panels B-C, respectively. Student x service panel regressions in column 6 stacks all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. Robust standard errors in parentheses. Hypothesis tests at bottom of table report associated p-values. All regressions include dummies for randomization strata. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A3: Message timing and message frequency, saturated model

<u>message frequency & timing</u>	<u>reduced time spent:</u>			<u>no</u>	<u>Student-service panel</u>				
	<u>studying</u> <u>other</u> <u>subjects</u>	<u>sleeping</u>	<u>other</u> <u>activity</u>	<u>extra</u> <u>time in</u> <u>Economics</u>	<u>opened</u> <u>email</u>	<u>clicked</u> <u>link</u>	<u>awareness</u> <u>of</u> <u>service</u>	<u>service</u> <u>use</u>	<u>multiple</u> <u>service</u> <u>use</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Week 3 only	-0.014 (0.030)	-0.015 (0.035)	0.010 (0.042)	0.019 (0.024)	0.750 (0.032)***	0.000 (0.001)	-0.002 (0.033)	0.005 (0.015)	0.006 (0.013)
Week 6 only	-0.007 (0.030)	-0.023 (0.035)	0.040 (0.041)	-0.011 (0.022)	0.380 (0.035)***	0.005 (0.005)	0.039 (0.031)	0.011 (0.013)	-0.006 (0.013)
Week 9 only	0.005 (0.033)	-0.038 (0.037)	0.050 (0.044)	-0.022 (0.021)	0.631 (0.036)***	0.006 (0.006)	0.039 (0.031)	0.006 (0.012)	0.006 (0.012)
Weeks 3 & 6	-0.031 (0.030)	0.049 (0.038)	-0.020 (0.042)	0.002 (0.024)	0.758 (0.032)***	0.017 (0.009)*	0.040 (0.033)	-0.012 (0.012)	0.004 (0.012)
Weeks 3 & 9	-0.020 (0.031)	0.015 (0.038)	-0.009 (0.043)	0.015 (0.025)	0.799 (0.030)***	0.000 (0.001)	0.070 (0.033)**	0.008 (0.011)	0.029 (0.010)***
Weeks 6 & 9	-0.012 (0.031)	-0.028 (0.036)	0.040 (0.043)	0.001 (0.023)	0.733 (0.033)***	0.011 (0.008)	0.067 (0.032)**	0.030 (0.013)**	0.027 (0.011)**
Weeks 3, 6, & 9	0.015 (0.035)	0.003 (0.038)	0.014 (0.045)	-0.031 (0.022)	0.762 (0.033)***	0.018 (0.011)*	0.104 (0.032)***	-0.012 (0.010)	0.002 (0.010)
N	1,838	1,838	1,838	1,838	1,812	1,812	5,514	6,357	6,357
control mean	0.17	0.26	0.50	0.08	0.00	0.00	0.65	0.34	0.31
H0: Weeks 3 & 6 v. Weeks 3 & 9	0.76	0.46	0.84	0.66	0.34	0.06	0.51	0.21	0.09
H0: Weeks 3 & 6 v. Weeks 6 & 9	0.60	0.08	0.24	0.96	0.59	0.62	0.55	0.02	0.13
H0: Weeks 3 & 9 v. Weeks 6 & 9	0.83	0.34	0.34	0.63	0.14	0.15	0.95	0.19	0.90

Sample is all participants, AY2018-2019 (excludes those randomly assigned text message for open email and clicked link outcomes). Covariates in regressions for opened email and time use outcomes are dummies for message promoting any academic service with given timing and frequency. Covariates in regressions for awareness and service use service-specific outcome and message in student-service panel, e.g., awareness of tutoring on left-hand side and tutoring messages on right-hand side. Student-service panel regressions include student-section random effect and service fixed effects. Robust standard errors in parentheses. All regressions include dummies for randomization strata. p-values of hypothesis tests for service-specific messages reported at bottom of table. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A4: Grade response to service use (OLS)

	any service use					multiple service use				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: grade (0-4)										
any service	0.63 (0.13)***					0.64 (0.10)***				
coaching		-0.58 (0.24)**			-0.64 (0.24)***		0.64 (0.77)			0.46 (0.88)
tutoring			0.25 (0.09)***		0.25 (0.09)***			0.34 (0.12)***		0.28 (0.13)**
practice problems				0.60 (0.13)***	0.60 (0.13)***				0.64 (0.10)***	0.63 (0.10)***
N	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009
mean outcome if service not used	1.81	2.35	2.33	1.84		1.78	2.34	2.34	1.79	
mean service use	0.95	0.01	0.05	0.95		0.92	0.00	0.02	0.92	
Panel B: grade (inverse hyperbolic sine)										
any service	0.37 (0.07)***					0.38 (0.06)***				
coaching		-0.30 (0.13)**			-0.34 (0.13)**		0.26 (0.25)			0.16 (0.31)
tutoring			0.14 (0.04)***		0.14 (0.04)***			0.18 (0.05)***		0.15 (0.05)***
practice problems				0.36 (0.07)***	0.36 (0.07)***				0.37 (0.06)***	0.37 (0.06)***
N	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009
mean outcome if service not used	1.17	1.49	1.48	1.18		1.15	1.49	1.48	1.16	
mean service use	0.95	0.01	0.05	0.95		0.92	0.00	0.02	0.92	
Panel C: DFW										
any service	-0.33 (0.04)***					-0.31 (0.04)***				
coaching		0.16 (0.10)*			0.19 (0.09)**		-0.20 (0.03)***			-0.13 (0.06)**
tutoring			-0.09 (0.04)**		-0.08 (0.04)**			-0.14 (0.04)***		-0.11 (0.04)***
practice problems				-0.32 (0.04)***	-0.32 (0.04)***				-0.31 (0.04)***	-0.31 (0.04)***
N	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119
mean outcome if service not used	0.52	0.23	0.24	0.52		0.51	0.23	0.24	0.50	
mean service use	0.94	0.01	0.05	0.94		0.91	0.00	0.02	0.90	

Sample is all participants in study, academic year 2018-2019. OLS regressions. Robust standard errors in parentheses. All regressions include dummies for randomization strata. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A5: Grade response to service use (2SLS)

	any service use					multiple service use				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: grade (0-4)										
any service	7.7 (26.0)					6.1 (20.6)				
coaching		3.8 (47.7)			55.6 (614.1)		3.3 (38.1)			43.5 (943.1)
tutoring			-27.4 (218.9)		-13.1 (87.7)			-18.9 (72.8)		-23.8 (417.3)
practice problems				3.9 (3.4)	-5.6 (60.9)				2.4 (2.0)	3.1 (21.5)
N	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009
Kleibergen-Paap F statistic	0.1	0.1	0.0	3.5	0.0	0.1	2.0	0.1	5.7	0.0
control mean	2.33	2.35	2.35	2.33		2.33	2.35	2.35	2.33	
mean service use	0.95	0.01	0.05	0.95		0.92	0.00	0.02	0.92	
proportion treated	0.74	0.26	0.25	0.23		0.74	0.26	0.25	0.23	
Panel B: grade (inverse hyperbolic sine)										
any service	5.7 (17.7)					4.5 (14.0)				
coaching		-5.4 (31.4)			15.3 (196.0)		-4.7 (19.0)			37.3 (783.0)
tutoring			-10.4 (84.4)		-5.5 (27.9)			-7.2 (29.1)		-20.5 (347.1)
practice problems				1.6 (1.6)	-2.3 (19.5)				1.0 (0.9)	1.5 (17.8)
N	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009
Kleibergen-Paap F statistic	0.1	0.1	0.0	3.5	0.0	0.1	2.0	0.1	5.7	0.0
control mean	1.47	1.49	1.49	1.48		1.47	1.49	1.49	1.48	
mean service use	0.95	0.01	0.05	0.95		0.92	0.00	0.02	0.92	
proportion treated	0.74	0.26	0.25	0.23		0.74	0.26	0.25	0.23	
Panel C: DFW										
any service	-17.7 (207.3)					-4.9 (19.6)				
coaching		-20.2 (154.2)			-2.8 (49.5)		11.4 (17.5)			-16.7 (305.5)
tutoring			-0.1 (6.4)		1.4 (2.7)			0.2 (12.8)		16.5 (199.1)
practice problems				-0.2 (1.2)	0.9 (2.2)				-0.1 (0.7)	0.4 (4.4)
N	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119
Kleibergen-Paap F statistic	0.0	0.0	0.1	2.5	0.0	0.1	2.0	0.1	4.4	0.0
control mean	0.25	0.24	0.23	0.23		0.25	0.24	0.23	0.23	
mean service use	0.94	0.01	0.05	0.94		0.91	0.00	0.02	0.90	
proportion treated	0.74	0.26	0.25	0.23		0.74	0.26	0.25	0.23	

Sample is all participants in study, academic year 2018-2019. Instruments are random assignment to encouragement messages: columns (1) & (7)=any message; columns (2) & (7)=coaching message; columns (3) & (8)=tutoring message; columns (4) & (9)=practice problem message; columns (5) & (10)=separate dummies for coaching, tutoring, and practice messages. Robust standard errors in parentheses. All regressions include dummies for randomization strata. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A6: Balance between text-eligible and ineligible students

<u>provided mobile number</u>	<u>no</u>	<u>yes</u>	<u>difference</u>
<u>Baseline variable</u>	<u>(1)</u>	<u>(2)</u>	<u>(1)-(2)</u>
freshman	0.220	0.293	-0.072***
	[0.415]	[0.455]	
sophomore	0.468	0.422	0.046**
	[0.499]	[0.494]	
other class year	0.312	0.286	0.026
	[0.463]	[0.452]	
female	0.357	0.346	0.011
	[0.479]	[0.476]	
First generation student	0.114	0.096	0.019
	[0.318]	[0.294]	
white	0.621	0.534	0.087***
	[0.485]	[0.499]	
Asian or Pacific Islander	0.073	0.062	0.011
	[0.260]	[0.241]	
hispanic	0.090	0.080	0.009
	[0.286]	[0.272]	
other race	0.216	0.324	-0.108***
	[0.412]	[0.468]	
high school GPA	3.486	3.452	0.034*
	[0.408]	[0.377]	
GPA at Oregon State, previous terms	3.104	3.024	0.080***
	[0.552]	[0.557]	
N	1261	858	
F-test (p-value)			0.000

Table shows means of baseline characteristic by whether student provided mobile phone number. Standard deviations in brackets. Final row reports p-value of F-test from regression of mobile provided dummy on all baseline characteristics (p-value from F-test of all baseline characteristics reported). Regression includes dummies missing GPA variables (GPA imputed to zero if missing). * significant at 10%; ** significant at 5%; *** significant at 1%

Table A7: Time use and advertising messages

	reduced time spent:			no
	studying other subjects	sleeping	other activity	extra time in Economics
	(1)	(2)	(3)	(4)
<u>Panel A: incentive</u>				
message	-0.006 (0.022)	0.006 (0.026)	-0.002 (0.030)	0.001 (0.016)
message*incentive	-0.008 (0.020)	-0.023 (0.024)	0.041 (0.027)	-0.009 (0.015)
N	1,838	1,838	1,838	1,838
control mean	0.17	0.26	0.50	0.08
<u>Panel B: message medium</u>				
email	-0.033 (0.040)	-0.051 (0.049)	0.045 (0.057)	0.038 (0.031)
text	0.021 (0.044)	-0.053 (0.050)	0.048 (0.058)	-0.023 (0.026)
email, with incentive	-0.019 (0.040)	0.048 (0.053)	0.019 (0.061)	-0.046 (0.031)
text, with incentive	-0.006 (0.048)	-0.018 (0.052)	-0.016 (0.064)	0.048 (0.031)
N	737	737	737	737
control mean	0.16	0.27	0.51	0.06
<u>Panel C: message timing</u>				
Week 3	-0.011 (0.017)	0.030 (0.021)	-0.028 (0.024)	0.010 (0.013)
Week 6	-0.004 (0.017)	0.006 (0.021)	0.011 (0.024)	-0.012 (0.013)
Week 9	0.008 (0.018)	-0.018 (0.021)	0.020 (0.024)	-0.011 (0.013)
N	1,838	1,838	1,838	1,838
control mean	0.17	0.26	0.50	0.08
<u>Panel D: message frequency</u>				
at least one message	-0.006 (0.023)	-0.025 (0.026)	0.033 (0.031)	-0.004 (0.017)
at least two messages	-0.016 (0.021)	0.037 (0.025)	-0.029 (0.029)	0.009 (0.016)
three messages	0.036 (0.034)	-0.010 (0.037)	0.011 (0.044)	-0.037 (0.021)*
N	1,838	1,838	1,838	1,838
control mean	0.17	0.26	0.50	0.08

Sample is all participants in study, academic year 2018-2019. Exception is Panel B, which includes only those eligible for text message treatment. Outcomes are self-reports from endline survey. Panel A reports treatment effects for any message, regardless of academic support service encouraged in message. Variables defined additively, so that in Panel C a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one. In Panel D, a student assigned two messages would have the "one message" and "two message" indicators equal to one, while a student assigned to three messages would have all message frequency indicators set to one. Robust standard errors in parentheses. All regressions include dummies for randomization strata. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A8: Academic service use within two weeks of message

Panel Service use	Student x service			student x week			Student x service x week
	Week 3 (1)	Week 6 (2)	Week 9 (3)	coaching (4)	tutoring (5)	practice (6)	all (7)
message	-0.030 (0.017)*	0.000 (0.017)	0.013 (0.019)	0.002 (0.003)	-0.007 (0.005)	-0.024 (0.023)	-0.002 (0.010)
message, with incentive	0.044 (0.025)*	0.005 (0.025)	0.002 (0.027)	-0.003 (0.003)	0.009 (0.009)	0.039 (0.032)	0.014 (0.015)
N	5,676	5,676	5,676	4,314	6,357	6,357	17,028
control mean	0.214	0.216	0.218	0.001	0.022	0.556	0.216
p(message+incentive)	0.45	0.80	0.43	0.07	0.77	0.54	0.23

Sample is all participants, AY2018-2019. Use of academic coaching outcome unavailable for Spring 2019. Columns (1)-(3) is panel of student-course-service observations. Outcome is service use within two weeks of week indicated in column heading. Coefficients reported are for message sent in week indicated in column heading. Regression also controls for messages sent in other weeks, message interacted with incentive, service fixed effects, and student-course random effects. Columns (4)-(6) is panel of student-course-week observations. Outcome is use within two weeks of service indicated in column heading. Coefficients reported are for message sent for service indicated in column heading. Regression also controls for messages sent for other services, interactions of those messages with incentive, week fixed effects, and student-course random effects. Column (7) is panel of student-course-service-week observations. Outcome is service use within two weeks. Coefficients reported are for message sent for service-week corresponding to the observation. Regression also includes student-course fixed effects and service*week fixed effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. p-values of hypothesis tests reported at bottom of table. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A9: Academic service use and encouragement messages, restricted to students in data only once

	any service use				multiple service use			
	<u>coaching</u>	<u>tutoring</u>	<u>practice</u>	<u>student x service</u>	<u>coaching</u>	<u>tutoring</u>	<u>practice</u>	<u>student x service</u>
	(1)	(2)	<u>problems</u> (3)	<u>panel</u> (4)	(5)	(6)	<u>problems</u> (7)	<u>panel</u> (8)
message	0.009 (0.011)	-0.011 (0.019)	0.025 (0.018)	0.014 (0.008)*	0.0000 (0.0002)	-0.012 (0.010)	0.046 (0.022)**	0.017 (0.007)***
message*incentive	-0.015 (0.011)	0.016 (0.024)	-0.017 (0.022)	-0.008 (0.011)	-0.0003 (0.0004)	0.022 (0.015)	-0.031 (0.027)	-0.005 (0.010)
N	1,599	1,599	1,599	4,797	1,599	1,599	1,599	4,797
control mean	0.012	0.056	0.934	0.330	0.0000	0.021	0.899	0.310
message+incentive	-0.006	0.005	0.007	0.010	0.0000	0.010	0.014	0.010
se(message+incentive)	0.008	0.020	0.021	0.010	0.0000	0.014	0.026	0.010
p-value	0.43	0.81	0.74	0.45	0.45	0.45	0.59	0.15

Sample is students appearing only once in study, inclusive of Spring 2018 pilot. All data from AY2018-2019. Treatment corresponds to service measured as outcome, i.e., message refers to coaching message when coaching is the outcome. Regressions in columns 1-3, 5-7 also control for messages and message*incentive for other services. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. Message + incentive reports sum of coefficients, with standard error and p-value below. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A10: Academic service use and message medium, restricted to students in data only once

<u>message type</u>	<u>any service use</u>				<u>multiple service use</u>			
	<u>coaching</u>	<u>tutoring</u>	<u>practice problems</u>	<u>student x service panel</u>	<u>coaching</u>	<u>tutoring</u>	<u>practice problems</u>	<u>student x service panel</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
email	0.007 (0.025)	0.013 (0.051)	0.064 (0.022)***	0.036 (0.017)**	0.000 (0.001)	0.009 (0.028)	0.111 (0.028)***	0.034 (0.010)***
text	-0.009 (0.008)	0.013 (0.050)	-0.023 (0.044)	0.009 (0.020)	0.000 (0.001)	0.013 (0.029)	0.023 (0.047)	0.017 (0.017)
email, with incentive	-0.018 (0.022)	0.047 (0.070)	-0.066 (0.041)	-0.014 (0.026)	-0.001 (0.002)	0.017 (0.040)	-0.113 (0.051)**	-0.027 (0.020)
text, with incentive	-0.011 (0.009)	-0.055 (0.046)	-0.010 (0.059)	-0.033 (0.025)	-0.004 (0.005)	-0.023 (0.028)	-0.039 (0.067)	-0.026 (0.024)
N	668	668	668	2,004	668	668	668	2,004
control mean	0.011	0.056	0.938	0.340	0.000	0.017	0.898	0.310
H5: email + incentive	0.18	0.24	0.97	0.28	0.58	0.39	0.98	0.67
H6: text + incentive	0.07	0.02	0.53	0.14	0.40	0.20	0.79	0.62
H7: email = text	0.49	1.00	0.04	0.29	0.64	0.90	0.00	0.35
H8: email incentive = text incentive	0.73	0.22	0.45	0.60	0.43	0.52	0.53	0.98
H9: email + incentive = text + incentive	0.28	0.04	0.62	0.07	0.50	0.23	0.84	0.51
H10: email + incentive = 0, text + incentive = 0	0.20	0.01	0.82	0.17	0.69	0.20	0.97	0.80

Sample is students who provided mobile phone number and appeared only once in study, inclusive of Spring 2018 pilot. All data from AY2018-2019. Treatment corresponds to service measured as outcome, i.e., email/text refers to coaching email/text when coaching is the outcome. Regressions in columns 1-3, 5-7 also control for email/text and email/text*incentive for other services. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. p-values of hypothesis tests reported at bottom of table. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A11: Academic service use and message timing, restricted to students in data only once

	<u>any service use</u>				<u>multiple service use</u>			
	<u>coaching</u>	<u>tutoring</u>	<u>practice</u> <u>problems</u>	<u>student x service</u> <u>panel</u>	<u>coaching</u>	<u>tutoring</u>	<u>practice</u> <u>problems</u>	<u>student x service</u> <u>panel</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Panel A: message timing</u>								
Week 3	0.002 (0.010)	-0.015 (0.020)	-0.015 (0.019)	-0.007 (0.009)	0.000 (0.000)	0.003 (0.013)	0.016 (0.021)	0.007 (0.008)
Week 6	0.003 (0.010)	-0.005 (0.020)	0.009 (0.018)	0.007 (0.009)	0.000 (0.000)	-0.005 (0.012)	-0.003 (0.023)	0.001 (0.008)
Week 9	-0.006 (0.009)	0.002 (0.020)	0.020 (0.017)	0.009 (0.009)	0.000 (0.000)	0.006 (0.012)	0.040 (0.021)*	0.017 (0.008)**
N	1,599	1,599	1,599	4,797	1,599	1,599	1,599	4,797
control mean	0.012	0.056	0.934	0.330	0.000	0.021	0.899	0.310
H1: Week 3 = Week 6	0.93	0.75	0.39	0.37	0.87	0.73	0.58	0.63
H2: Week 3 = Week 9	0.62	0.60	0.20	0.26	0.96	0.86	0.44	0.43
H3: Week 6 = Week 9	0.57	0.82	0.70	0.87	0.85	0.56	0.26	0.24
<u>Panel B: message frequency</u>								
at least one message	0.002 (0.010)	0.014 (0.022)	0.013 (0.021)	0.015 (0.009)	0.000 (0.000)	-0.010 (0.010)	0.010 (0.027)	0.005 (0.008)
at least two messages	0.005 (0.013)	-0.024 (0.025)	0.013 (0.022)	-0.001 (0.012)	0.000 (0.000)	0.025 (0.017)	0.042 (0.027)	0.023 (0.010)**
three messages	-0.018 (0.011)*	-0.030 (0.025)	-0.039 (0.048)	-0.029 (0.015)*	0.000 (0.000)	-0.036 (0.015)**	-0.022 (0.048)	-0.024 (0.013)*
N	1,599	1,599	1,599	4,797	1,599	1,599	1,599	4,797
control mean	0.012	0.056	0.934	0.330	0.000	0.021	0.899	0.310
H4: at least two messages (total effect)	0.57	0.62	0.16	0.11	0.71	0.33	0.02	0.00
H5: three messages (total effect)	0.05	0.07	0.79	0.25	0.80	0.00	0.53	0.75

Sample is students appearing only once in study, inclusive of Spring 2018 pilot. All data from AY2018-2019. Treatment corresponds to service measured as outcome, i.e., in Panel A, Week 3 refers to coaching message in Week 3 when coaching is the outcome. In Panel B, at least one message refers to at least one coaching message when coaching is the outcome. Variables defined additively, so that in Panel A a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one. In Panel B, a student assigned two messages would have the "one message" and "two message" indicators equal to one, while a student assigned to three messages would have all message frequency indicators set to one. Regressions in columns 1-3, 5-7 also control for timing (Panel A) or frequency (Panel B) of messages for other services. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. p-values of hypothesis tests reported at bottom of table. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A12: Treatment reclassification due to Fall 2018 email distribution error

<u>treatment characteristic</u>	<u>original</u> (1)	<u>reclassified</u> (2)	<u>% reclassified</u> (3)
<i>any treatment</i>			
control	556	622	3.1%
treatment	1,563	1,497	3.1%
<i>message type</i>			
coaching	541	520	1.0%
tutoring	530	506	1.1%
practice problems	492	471	1.0%
<i>incentive</i>			
no incentive	808	773	1.7%
lottery	755	724	1.5%
<i>medium</i>			
email	1,256	1,190	3.1%
text	307	307	0.0%
<i>timing</i>			
Week 3	887	887	0.0%
Week 6	893	898	12.7%
Week 9	872	872	0.0%
<i>frequency</i>			
one message	679	612	9.4%
two messages	679	610	9.6%
three messages	205	275	3.3%
<i>timing and frequency</i>			
Week 3	231	164	3.2%
Week 6	233	167	3.1%
Week 9	215	281	3.1%
Weeks 3/6	227	294	3.2%
Weeks 3/9	224	154	3.3%
Weeks 6/9	228	162	3.1%
Weeks 3/6/9	205	275	3.3%

Table shows number of observations assigned to each treatment. Column 1 is original treatment assignment. Column 2 is treatment assignment following reclassification due to Fall 2018 email distribution error, in which Week 3 email recipients were also emailed in Week 6, while those assigned Week 6 email were not sent any message. Column 3 shows percentage difference in treatment assignments within each category.

Table A13: Message take-up and service awareness, adjusted for Fall 2018 email distribution error

	<u>opened</u> <u>email</u>	<u>clicked</u> <u>link</u>	<u>coaching</u>	<u>tutoring</u>	<u>awareness</u> <u>practice</u> <u>problems</u>	<u>student-service</u> <u>panel</u>
	(1)	(2)	(3)	(4)	(5)	(6)
<u>Panel A: incentive</u>						
message	0.726 (0.018)***	0.005 (0.003)*	0.007 (0.041)	0.059 (0.036)*	0.068 (0.035)*	0.053 (0.019)***
message*incentive	-0.005 (0.025)	0.007 (0.005)	0.021 (0.048)	0.011 (0.041)	0.005 (0.041)	-0.004 (0.025)
N	1,812	1,812	1,838	1,838	1,838	5,514
control mean	0.72	0.01	0.55	0.71	0.71	0.66
<u>Panel B: message medium</u>						
email			0.125 (0.088)	0.127 (0.074)*	0.140 (0.074)*	0.123 (0.043)***
text			-0.093 (0.078)	0.080 (0.077)	-0.091 (0.080)	-0.041 (0.042)
email, with incentive			-0.069 (0.109)	0.042 (0.086)	-0.005 (0.090)	-0.037 (0.055)
text, with incentive			0.016 (0.104)	0.053 (0.093)	0.199 (0.094)**	0.057 (0.057)
N			737	737	737	2,211
control mean			0.48	0.63	0.70	0.61
<u>Panel C: message timing</u>						
Week 3	0.302 (0.026)***	-0.004 (0.004)	0.023 (0.045)	0.070 (0.037)*	-0.086 (0.039)**	0.000 (0.023)
Week 6	0.288 (0.033)***	0.017 (0.006)***	0.016 (0.053)	-0.011 (0.044)	0.124 (0.045)***	0.045 (0.027)*
Week 9	0.322 (0.022)***	0.003 (0.004)	-0.005 (0.040)	0.047 (0.033)	0.093 (0.033)***	0.048 (0.020)**
N	1,812	1,812	1,838	1,838	1,838	5,514
control mean	0.00	0.00	0.55	0.71	0.71	0.66
<u>Panel D: message frequency</u>						
at least one message	0.650 (0.025)***	0.003 (0.004)	-0.028 (0.054)	0.043 (0.042)	0.060 (0.044)	0.023 (0.024)
at least two messages	0.130 (0.041)***	0.005 (0.008)	0.075 (0.073)	0.025 (0.057)	-0.023 (0.060)	0.035 (0.036)
three messages	-0.017 (0.045)	0.009 (0.014)	-0.009 (0.080)	0.038 (0.069)	0.154 (0.062)**	0.046 (0.042)
N	1,812	1,812	1,838	1,838	1,838	5,514
control mean	0.00	0.00	0.55	0.71	0.71	0.66

Sample is all participants in study, academic year 2018-2019. Treatments are adjusted for Fall 2018 email distribution error, using random assignment as instruments in 2SLS estimation. Data on email outcomes is administrative. Awareness outcomes are self-reports from endline survey. Regressions for opened email and clicked link (columns 1-2) exclude those randomly assigned to receive text messages. Regressions for service-specific awareness (columns 3-5) report coefficient on message specific to that service. For example, the table reports the coefficient on the tutoring message when tutoring is the outcome. Variables defined additively, so that in Panel C a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one. In

Panel D, a student assigned two messages would have the "one message" and "two message" indicators equal to one, while a student assigned to three messages would have all message frequency indicators set to one. Regressions in columns 3-5 also control for timing or frequency of messages for other services in Panels C-D, respectively. Student x service panel regressions in column 6 stacks all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. Robust standard errors in parentheses. All regressions include dummies for randomization strata. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A14: Academic service use and encouragement messages, adjusted for Fall 2018 email distribution error

	<u>any service use</u>				<u>multiple service use</u>			
	<u>coaching</u>	<u>tutoring</u>	<u>practice</u>	<u>student x service</u>	<u>coaching</u>	<u>tutoring</u>	<u>practice</u>	<u>student x service</u>
	(1)	(2)	<u>problems</u> (3)	<u>panel</u> (4)	(5)	(6)	<u>problems</u> (7)	<u>panel</u> (8)
message	0.002 (0.009)	-0.016 (0.017)	0.017 (0.017)	0.007 (0.007)	-0.002 (0.002)	-0.007 (0.010)	0.035 (0.020)*	0.012 (0.006)**
message*incentive	-0.003 (0.010)	0.006 (0.019)	-0.007 (0.020)	-0.003 (0.010)	0.000 (0.000)	0.013 (0.013)	-0.022 (0.025)	-0.005 (0.009)
N	2,119	2,119	2,119	6,357	2,119	2,119	2,119	6,357
Kleibergen-Paap F statistic	5,369.1	5,369.1	5,369.1	N/A	5,369.1	5,369.1	5,369.1	N/A
control mean	0.011	0.058	0.937	0.340	0.002	0.023	0.900	0.310
message+incentive	-0.001	-0.010	0.011	0.000	-0.002	0.006	0.013	0.010
se(message+incentive)	(0.008)	(0.017)	(0.018)	(0.010)	(0.002)	(0.012)	(0.023)	(0.010)
p-value	0.90	0.58	0.56	0.57	0.31	0.62	0.57	0.30

Sample is all participants in study, AY2018-2019. Treatments are adjusted for Fall 2018 email distribution error, using random assignment as instruments in 2SLS estimation. Treatment corresponds to service measured as outcome, i.e., message refers to coaching message when coaching is the outcome. Regressions in columns 1-3, 5-7 also control for messages and message*incentive for other services. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. Message + incentive reports sum of coefficients, with standard error and p-value below. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A15: Academic service use and message medium, adjusted for Fall 2018 email distribution error

message type	any service use				multiple service use			
	coaching	tutoring	practice problems	student x service panel	coaching	tutoring	practice problems	student x service panel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
email	0.006 (0.021)	0.009 (0.039)	0.071 (0.019)***	0.031 (0.015)**	0.001 (0.001)	0.017 (0.026)	0.117 (0.025)***	0.040 (0.011)***
text	-0.009 (0.007)	-0.002 (0.039)	-0.019 (0.039)	-0.001 (0.017)	-0.001 (0.001)	0.003 (0.023)	0.032 (0.041)	0.013 (0.015)
email, with incentive	-0.013 (0.019)	0.050 (0.057)	-0.057 (0.035)	-0.007 (0.024)	-0.002 (0.002)	0.020 (0.039)	-0.095 (0.046)**	-0.023 (0.019)
text, with incentive	0.016 (0.020)	-0.044 (0.036)	-0.021 (0.053)	-0.024 (0.023)	0.000 (0.001)	-0.013 (0.021)	-0.053 (0.058)	-0.024 (0.021)
N	858	858	858	2,574	858	858	858	2,574
Kleibergen-Paap F statistic	899.7	899.7	899.7	N/A	899.7	899.7	899.7	N/A
control mean	0.009	0.060	0.940	0.340	0.000	0.017	0.902	0.310
H5: email + incentive	0.31	0.21	0.71	0.21	0.60	0.24	0.65	0.32
H6: text + incentive	0.74	0.00	0.38	0.12	0.59	0.22	0.68	0.46
H7: email = text	0.42	0.83	0.01	0.14	0.39	0.65	0.02	0.11
H8: email incentive = text incentive	0.28	0.16	0.58	0.61	0.50	0.47	0.57	0.97
H9: email + incentive = text + incentive	0.49	0.02	0.32	0.04	0.94	0.11	0.50	0.20
H10: email + incentive = 0, text + incentive = 0	0.46	0.00	0.60	0.12	0.81	0.11	0.79	0.44

Sample is all participants who provided mobile phone number, AY2018-2019. Treatments are adjusted for Fall 2018 email distribution error, using random assignment as instruments in 2SLS estimation. Treatment corresponds to service measured as outcome, i.e., email/text refers to coaching email/text when coaching is the outcome. Regressions in columns 1-3, 5-7 also control for email/text and email/text*incentive for other services. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. p-values of hypothesis tests reported at bottom of table. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A16: Academic service use and message timing, adjusted for Fall 2018 email distribution error

	<u>any service use</u>				<u>multiple service use</u>			
	<u>coaching</u>	<u>tutoring</u>	<u>practice</u> <u>problems</u>	<u>student x service</u> <u>panel</u>	<u>coaching</u>	<u>tutoring</u>	<u>practice</u> <u>problems</u>	<u>student x service</u> <u>panel</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Panel A: message timing</u>								
Week 3	0.001 (0.012)	-0.022 (0.020)	-0.019 (0.018)	-0.012 (0.010)	0.000 (0.001)	0.001 (0.014)	0.015 (0.022)	0.005 (0.008)
Week 6	0.000 (0.012)	-0.007 (0.022)	0.009 (0.023)	0.005 (0.011)	-0.001 (0.001)	-0.009 (0.014)	-0.013 (0.029)	-0.004 (0.010)
Week 9	-0.005 (0.008)	0.001 (0.016)	0.028 (0.015)*	0.011 (0.008)	-0.001 (0.001)	0.007 (0.011)	0.041 (0.019)**	0.016 (0.007)**
N	2,119	2,119	2,119	6,357	2,119	2,119	2,119	6,357
Kleibergen-Paap F statistic	633.6	633.6	633.6	N/A	633.6	633.6	633.6	N/A
control mean	0.011	0.058	0.937	0.340	0.002	0.023	0.900	0.310
H1: Week 3 = Week 6	0.96	0.71	0.42	0.35	0.40	0.69	0.53	0.55
H2: Week 3 = Week 9	0.73	0.43	0.06	0.09	0.43	0.77	0.39	0.36
H3: Week 6 = Week 9	0.75	0.76	0.53	0.69	0.64	0.39	0.17	0.14
<u>Panel B: message frequency</u>								
at least one message	-0.001 (0.012)	0.002 (0.022)	0.003 (0.022)	0.008 (0.010)	-0.002 (0.002)	-0.005 (0.011)	0.003 (0.024)	-0.001 (0.010)
at least two messages	0.008 (0.017)	-0.016 (0.029)	0.024 (0.029)	0.003 (0.015)	0.000 (0.000)	0.015 (0.015)	0.040 (0.025)	0.025 (0.013)*
three messages	-0.020 (0.011)*	-0.028 (0.024)	-0.019 (0.040)	-0.024 (0.014)*	0.000 (0.001)	-0.029 (0.012)**	-0.015 (0.039)	-0.022 (0.013)*
N	2,119	2,119	2,119	6,357	2,119	2,119	2,119	6,357
Kleibergen-Paap F statistic	55.6	55.6	55.6	N/A	55.6	55.6	55.6	N/A
control mean	0.011	0.058	0.937	0.340	0.002	0.023	0.900	0.310
H4: at least two messages (total effect)	0.54	0.48	0.17	0.21	0.30	0.29	0.03	0.00
H5: three messages (total effect)	0.01	0.01	0.81	0.24	0.35	0.00	0.45	0.80

Sample is all participants, AY2018-2019. Treatments are adjusted for Fall 2018 email distribution error, using random assignment as instruments in 2SLS estimation. Treatment corresponds to service measured as outcome, i.e., in Panel A, Week 3 refers to coaching message in Week 3 when coaching is the outcome. In Panel B, at least one message refers to at least one coaching message when coaching is the outcome. Variables defined additively, so that in Panel A a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one. In Panel B, a student assigned two messages would have the "one message" and "two message" indicators equal to one, while a student assigned to three messages would have all message frequency indicators set to one. Regressions in columns 1-3, 5-7 also control for timing (Panel A) or frequency (Panel B) of messages for other services. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include dummies for randomization strata. Robust standard errors in parentheses. p-values of hypothesis tests reported at bottom of table. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A17: Academic service use and encouragement messages (student-service panel), adjusted for Fall 2018 email distribution error

	any service use				multiple service use							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
message	0.008 (0.006)	-0.002 (0.011)	0.004 (0.011)	-0.001 (0.008)	0.009 (0.006)	0.000 (0.013)	0.012 (0.006)**	0.002 (0.011)	0.010 (0.010)	0.004 (0.008)	0.014 (0.006)**	0.005 (0.012)
message*freshman		0.023 (0.016)						0.020 (0.016)				
message*sophomore		0.009 (0.014)						0.011 (0.014)				
message*male			0.006 (0.013)						0.002 (0.012)			
message*GPA below median				0.019 (0.012)						0.016 (0.012)		
message*first generation					-0.004 (0.021)						-0.023 (0.021)	
message*low service demand						0.012 (0.015)						0.009 (0.013)
N	6,357	6,357	6,357	6,357	6,357	6,357	6,357	6,357	6,357	6,357	6,357	6,357
control mean	0.00	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.02	-0.01	0.01
p-value(message+interaction 1)		0.42	0.14	0.04	0.82	0.08		0.06	0.08	0.02	0.67	0.03
p-value(message+interaction 2)		0.00						0.00				

Sample is all participants in study, AY2018-2019. Unit of analysis is student-section-service panel. Treatments are adjusted for Fall 2018 email distribution error, using random assignment as instruments in 2SLS estimation. All regressions include student-section, randomization strata, and service fixed effects. All interactions measured at baseline. Low service demand is at/below median demand for tutoring and academic coaching, from baseline survey. Robust standard errors in parentheses. p-values of test of linear below. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A18: Encouragement messages and time use, adjusted for Fall 2018 email distribution error

	reduced time spent:			no
	studying other subjects	sleeping	other activity	extra time in Economics
	(1)	(2)	(3)	(4)
<u>Panel A: incentive</u>				
message	-0.006 (0.023)	0.006 (0.027)	-0.002 (0.031)	0.001 (0.017)
message*incentive	-0.008 (0.021)	-0.024 (0.024)	0.043 (0.028)	-0.010 (0.015)
N	1,838	1,838	1,838	1,838
Kleibergen-Paap F statistic	14,774.9	14,774.9	14,774.9	14,774.9
control mean	0.17	0.26	0.50	0.08
<u>Panel B: message medium</u>				
email	-0.034 (0.041)	-0.054 (0.050)	0.048 (0.058)	0.040 (0.031)
text	0.021 (0.043)	-0.053 (0.049)	0.048 (0.056)	-0.023 (0.025)
email, with incentive	-0.020 (0.041)	0.050 (0.054)	0.020 (0.062)	-0.049 (0.031)
text, with incentive	-0.006 (0.047)	-0.018 (0.050)	-0.016 (0.062)	0.048 (0.030)
N	737	737	737	737
Kleibergen-Paap F statistic	2,606.5	2,606.5	2,606.5	2,606.5
control mean	0.16	0.27	0.51	0.06
<u>Panel C: message timing</u>				
Week 3	-0.010 (0.019)	0.028 (0.022)	-0.032 (0.026)	0.015 (0.015)
Week 6	-0.005 (0.024)	0.008 (0.028)	0.014 (0.033)	-0.016 (0.018)
Week 9	0.008 (0.018)	-0.018 (0.021)	0.020 (0.024)	-0.010 (0.013)
N	1,838	1,838	1,838	1,838
Kleibergen-Paap F statistic	2,078.2	2,078.2	2,078.2	2,078.2
control mean	0.17	0.26	0.50	0.08
<u>Panel D: message frequency</u>				
at least one message	-0.004 (0.026)	-0.033 (0.031)	0.040 (0.036)	-0.006 (0.019)
at least two messages	-0.023 (0.029)	0.051 (0.035)	-0.042 (0.040)	0.017 (0.022)
three messages	0.042 (0.038)	-0.015 (0.042)	0.016 (0.050)	-0.042 (0.025)*
N	1,838	1,838	1,838	1,838
Kleibergen-Paap F statistic	542.1	542.1	542.1	542.1
control mean	0.17	0.26	0.50	0.08

Sample is all participants in study, academic year 2018-2019. Exception is Panel B, which includes only those eligible for text message treatment. Outcomes are self-reports from endline survey. Treatments are adjusted for Fall 2018 email distribution error, using random assignment as instruments in 2SLS estimation. Panel A reports treatment effects for any message, regardless of academic support service encouraged in message. Variables defined additively, so that in Panel C a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one. In Panel D, a student assigned two messages would have the "one message" and "two message" indicators equal to one, while a student assigned to three messages would have all message frequency indicators set to one. Robust standard errors in parentheses. All regressions include dummies for randomization strata. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A19: Academic service use, heterogeneity by midterm score

	any service use				multiple service use			
	coaching	tutoring	practice	student x service panel	coaching	tutoring	practice	student x service panel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A								
message	-0.004 (0.010)	-0.012 (0.021)	0.005 (0.021)	0.000 (0.008)	-0.006 (0.006)	-0.004 (0.014)	0.016 (0.028)	-0.001 (0.008)
message*low midterm score	0.004 (0.014)	0.009 (0.027)	0.018 (0.027)	0.011 (0.011)	0.006 (0.005)	0.004 (0.018)	0.020 (0.035)	0.018 (0.010)*
N	2,027	2,027	2,027	6,081	2,027	2,027	2,027	6,081
control mean	0.01	0.06	0.95	0.34	0.00	0.02	0.91	0.31
Panel B								
message	0.008 (0.009)	0.019 (0.026)	0.009 (0.024)	0.011 (0.011)	0.000 (0.000)	0.012 (0.014)	0.016 (0.037)	0.005 (0.011)
message*disappointing midterm score	-0.013 (0.012)	-0.031 (0.031)	0.011 (0.029)	-0.006 (0.012)	-0.003 (0.003)	-0.017 (0.019)	0.018 (0.041)	0.008 (0.012)
N	2,027	2,027	2,027	6,081	2,027	2,027	2,027	6,081
control mean	0.01	0.06	0.95	0.34	0.00	0.02	0.91	0.31

Sample is all participants, AY2018-2019. Treatment corresponds to service measured as outcome, i.e., message refers to coaching message when coaching is the outcome. Low midterm score is dummy for midterm grade of less than 80%. Disappointing midterm score is midterm grade<90% if expected an A in course, or midterm grade<80% if expected a B in the course, based on grade expectations in baseline survey. Midterm score is average of midterm average in sections that administered two midterms. Regressions in columns 1-3, 5-7 also control for messages for other services and their interactions with midterm performance. Student x service panel regressions in columns 4/8 stack all student-by-section-by-service observations to form a panel. Student x service regressions include service fixed effects and student-section random effects. All regressions also include main effect of midterm score dummy and dummies for randomization strata. Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A20: Exam performance and message timing

	Midterm 1 (1)	Midterm 2 (2)	Final Exam (3)
<u>Panel A: any service</u>			
Week 3 (before midterm 1)	0.3 (0.7)	0.1 (1.0)	0.1 (0.8)
Week 6 (before midterm 2)	-0.6 (0.7)	-0.4 (1.0)	-0.5 (0.8)
Week 9 (before final exam)	0.5 (0.7)	0.1 (1.0)	0.3 (0.9)
N	2,027	1,470	2,023
control mean	72.0	69.3	66.4
<u>Panel B: specific service</u>			
<i>Coaching</i>			
Week 3 (before midterm 1)	2.2 (1.2)*	2.0 (1.5)	1.0 (1.3)
Week 6 (before midterm 2)	-0.7 (1.2)	-1.1 (1.5)	0.3 (1.3)
Week 9 (before final exam)	-1.1 (1.2)	-1.7 (1.5)	-1.6 (1.4)
<i>Tutoring</i>			
Week 3 (before midterm 1)	-1.2 (1.2)	-2.2 (1.5)	-1.4 (1.4)
Week 6 (before midterm 2)	-1.3 (1.1)	-1.1 (1.5)	-0.7 (1.3)
Week 9 (before final exam)	1.2 (1.1)	1.9 (1.5)	1.1 (1.4)
<i>Practice problems</i>			
Week 3 (before midterm 1)	0.0 (1.3)	0.5 (1.7)	0.8 (1.4)
Week 6 (before midterm 2)	0.3 (1.2)	1.3 (1.7)	-1.2 (1.5)
Week 9 (before final exam)	1.4 (1.2)	0.5 (1.8)	1.5 (1.5)
N	2,027	1,470	2,023
control mean	72.0	69.3	66.4

Sample is all participants in study, academic year 2018-2019. Outcomes are exam scores, from 0-100 points. Midterm 1 was administered in Week 4/5, depending on section. Midterm 2 was administered in Week 7, only in sections with two midterms. Final exam was administered in Week 11 (exam week). Panel A shows treatment effects for message promoting any academic support service. Panel B disaggregates messages by service type. Variables defined additively, so that a student assigned to receive a message in Weeks 3, 6, and 9 would have all of the week indicator variables equal to one. Robust standard errors in parentheses. All regressions include dummies for randomization strata. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A21: Practice problem use, heterogeneity by student characteristics

	any practice problem use						multiple practice problem use						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
message	0.016 (0.014)	0.014 (0.015)	0.014 (0.015)	0.020 (0.028)	0.004 (0.030)	0.011 (0.030)	0.026 (0.018)	0.023 (0.018)	0.021 (0.018)	0.056 (0.036)	0.037 (0.036)	0.045 (0.036)	
message*underrepresented minority	-0.023 (0.054)			-0.235 (0.108)**			-0.020 (0.064)				-0.280 (0.114)**		
message*first generation		-0.005 (0.050)			-0.032 (0.106)			0.005 (0.065)				-0.022 (0.136)	
message*URM or first generation			-0.002 (0.041)			-0.058 (0.088)			0.014 (0.051)			-0.051 (0.111)	
message*group*1(freshman/sophomore)				0.279 (0.121)**	0.046 (0.117)	0.082 (0.099)					0.337 (0.132)**	0.044 (0.152)	0.098 (0.124)
N	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	2,119	
control mean	0.94	0.94	0.94	0.94	0.94	0.94	0.90	0.90	0.90	0.90	0.90	0.90	
p-value(sum of all interaction terms)	0.90	0.85	0.76	0.26	0.51	0.34	0.92	0.66	0.45	0.28	0.54	0.25	

Sample is all participants in study, AY2018-2019. Unit of analysis is student-section. Outcomes and messages are for extra practice problems. Underrepresented minority (URM) is dummy for black, Hispanic, American Indian, or Pacific Islander. All regressions include all main effects of student characteristics; all coaching and tutoring message dummies and their interactions with student characteristics; and dummies for randomization strata. Regressions with triple interactions also include service*freshman or sophomore interaction. Robust standard errors in parentheses. Final row reports p-value of test of sum of all interaction terms. * significant at 10%; ** significant at 5%; *** significant at 1%

Table A22: Attention (conditional on attention at baseline)

service		<u>coaching</u>	<u>tutoring</u>	<u>practice problems</u>	<u>any service</u>
sample proportions:		(1)	(2)	(3)	(4)
always attentive	Pr(M=1 Z=0)	0.54 (0.02)	0.71 (0.01)	0.71 (0.02)	0.65 (0.01)
never attentive	Pr(M=0 Z=1)	0.47 (0.03)	0.22 (0.02)	0.16 (0.03)	0.31 (0.02)
compliers	Pr(M=1 Z=1) -	0.01	0.08	0.15	0.04
	Pr(M=1 Z=0)	(0.03)	(0.03)	(0.04)	(0.02)

Table shows proportion of each type, by academic service. Sample is all students who completed endline survey and demonstrated attentiveness at baseline. Always attentive is defined as a student indicating awareness of the service in endline survey, conditional on being in the control group for receiving an encouragement message for that service. Never attentive is defined as a student not indicating awareness of service in endline survey, conditional on being in the treatment group for encouragement messages for that service. Always/never attentive proportions and standard error obtained from regressing always/never attentive dummy, demeaned by randomization strata, on a constant. Proportion compliers and standard error from regression of awareness of service on assignment to treatment for that service, controlling for randomization strata. Regressions for "any service" (column 4) stack observations into a student-service panel. For coaching and tutoring, attentive at baseline defined as indicating plans to use the service in the baseline survey. For extra practice problems, attentive at baseline defined as viewing extra practice problems during Weeks 3-5 even though not assigned an encouragement message in Week 3. Treatment for extra practice problems redefined as assignment to encouragement message in Weeks 6 or 9, with students assigned an encouragement message in Week 3 dropped from sample.

Table A23: Structural estimates (conditional on attention at baseline)

	<u>coaching</u>	<u>tutoring</u>	<u>practice problems</u>	<u>all</u>
	(1)	(2)	(3)	(4)
<u>Panel A: $b=0.001$</u>				
$-c$	-4.24 (0.25)***	-2.85 (0.13)***	1.37 (0.08)***	-4.28 (0.23)***
τ_b				
ITT	-0.01 (0.21)	0.08 (0.10)	0.06 (0.10)	0.06 (0.07)
LATE	-1.38 (26.76)	1.02 (1.20)	0.41 (0.64)	1.72 (1.76)
<u>Panel B: $b=0.01$</u>				
$-c$	-4.25 (0.25)***	-2.86 (0.13)***	1.35 (0.08)***	-4.29 (0.23)***
τ_b				
ITT	-0.02 (0.22)	0.08 (0.10)	0.06 (0.10)	0.06 (0.07)
LATE	-2.13 (26.87)	0.96 (1.21)	0.38 (0.65)	1.58 (1.77)
<u>Panel C: $b=0.1$</u>				
$-c$	-4.38 (0.25)***	-3.00 (0.13)***	1.18 (0.08)***	-4.43 (0.23)***
τ_b				
ITT	-0.07 (0.22)	0.03 (0.10)	0.01 (0.10)	0.01 (0.07)
LATE	-9.15 (27.92)	0.37 (1.26)	0.08 (0.67)	0.30 (1.84)
N	1,409	1,459	993	3,861
Pr(complier)	0.01	0.08	0.15	0.04

Table reports estimates of parameters c , τ_b from structural model of academic service use. ITT reports estimated coefficient on $Z=1$ (assigned message for service). LATE reports ITT/Pr(complier), where Pr(complier) reported at bottom of table. Column (4) stacks all services into a student \times service panel, with service fixed effects included in estimation. Discount factor $\delta=0.95$. Sample limited to students attentive at baseline. For coaching and tutoring, attentive at baseline defined as indicating plans to use the service in the baseline survey. For extra practice problems, attentive at baseline defined as viewing extra practice problems during Weeks 3-5 even though not assigned an encouragement message in Week 3. Treatment for extra practice problems redefined as assignment to encouragement message in Weeks 6 or 9, with students assigned an encouragement message in Week 3 dropped from sample. Use of extra practice problems defined as viewing extra practice problems in Week 6 or later. Standard errors in parenthesis.