My Department Cares:

Supporting Students through Encouragement Emails*

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PRELIMINARY DRAFT

Abstract

We examine the impact of an intervention targeting all economics majors at a large public university with the aim of providing encouragement during challenging periods in the semester. We randomly selected students who would receive six weekly emails on behalf of the department of economics during the latter half of the Fall 2021 semester. Drawing insights from studies in social psychology, we designed the emails with the aim of enhancing students' sense of belonging, self-efficacy and growth mindset, while providing information about available resources. In addition, for a subsample of the treated students, each email featured a peer role model, i.e., a former student who had recently graduated from the same university. A third treatment group also received an encouragement message from the featured role model. We find evidence of a positive impact of the encouragement emails on women's academic performance, notably driven by under-represented minority (URM) women. Our analysis of mechanisms points at improvements in URM women's growth mindset and emotional well-being. These results underscore the critical role of a supportive learning environment in promoting academic success, particularly among students from traditionally marginalized backgrounds.

JEL codes: A22, I24, C93

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1 Introduction

Earning differentials between college majors have widened in the past three decades, making students' choice of major increasingly important in determining job opportunities and wages. Gender, race, and socioeconomic differentials in post-secondary education choices play an important role in the observed pay gaps (Altonji et al., 2016, 2023; Andrews et al., 2022). Economics – the highest earning major in the social sciences, and one of the highest earning majors overall – is characterized by few women and even fewer students from under-represented backgrounds (Bayer and Rouse, 2016; Lundberg and Stearns, 2019; Buckles, 2019). A growing number of studies have assessed the impact of "light-touch" interventions on the likelihood of women and under-represented minority students to major in economics. The interventions have ranged from information campaigns (Bayer et al., 2019; Chambers et al., 2021; Pugatch and Schroeder, 2021; Gentry et al., 2023), to exposure to role models (Porter and Serra, 2020; Patnaik et al., 2023) or a diverse set of teaching assistants (Bayer et al., 2020) to encouragement nudges (Halim et al., 2022; Li, 2018).[1]

In this paper, we implement a light-touch intervention consisting in sending weekly encouraging emails to students majoring in economics on behalf of the Department of Economics. Unlike other studies that focus on increasing diversity in economics by identifying effective methods to attract high-achieving students to the major, our intervention is specifically designed to support students who have already chosen the economics major but may be struggling and are at risk of changing major or dropping out of college. Our design is motivated by research showing that students who are under-represented within a field of study are less likely to feel like they belong in the major and have difficulties connecting with their professors and with fellow students (Bayer et al., 2020; Gopalan and Brady, 2020). As a result, they tend to change major (Shan, 2023), are less likely to graduate within six years (Bostwick and Weinberg, 2022) and more likely to drop out of college (Carrell and Kurlaender, 2023).

Drawing from the social psychology literature (Wilson and Linville, 1982; Walton and Cohen, 2011; Walton et al., 2023; Yeager et al., 2019, 2022), we designed and evaluated (through a randomized controlled trial) the impact of encouragement emails aimed at strengthening under-represented minority students' sense of belonging, growth mindset and emotional well-being, with the overall objective of increasing academic performance and persistence with the major. Importantly, the students randomly assigned to the treatment group received several emails during the second half of the semester, a time when students are typically

[1] See Avilova and Goldin (2024) for a review of initiatives and interventions, promoted by the Undergraduate Women Challenge (UWE), to increase the number of women majoring in economics in the US.

under intense stress.[2]

We conducted the encouragement intervention at a large public university, where students declare their major at the time of enrollment. In Fall 2021, just over 1000 undergraduate students had chosen economics as their major. About 25 percent of them are women and 25 percent are under-represented minority (URM) students, and primarily Hispanic.[3] We randomly assigned students to either a control group or one of three treatment groups, which received weekly emails for six weeks, from mid-November to mid-December. The emails were sent on behalf of the Department of Economics and were centered around the message "You belong here and you can do this." At the bottom of the email, students could find links to the First Generation Student Center, the Mental Health Counseling center, and the Economics Tutoring Center.

Students in the *Email* group (Treatment 1) received the emails described above, with slightly different introductory text each week. Students in the *Email & Peers* treatment group (Treatment 2) received emails that, in addition, contained the profile a *role model*, i.e., the name, photo and current job of a peer who recently graduated from the same university with an economics degree. We chose the "peer role models" among students who had previously been interviewed by the Department and featured on the departmental website as part of an "Amazing Student" initiative. Each of the six emails in this treatment featured a different role model. Since we designed the intervention to target primarily women and URM students, we selected the role models to be mostly women and Hispanic. The emails sent to students in the *Email & Peer Encouragement* group (Treatment 3), contained the same information and peer role models' profiles as the T2 emails, but they also included an encouraging message written by the role model.

We employ student-level administrative data (e.g. courses taken and grades) from the Registrar's office for all students in the sample. We use these data to test whether the intervention impacted students' performances in economics and non-economics classes the semester of the intervention and the following semester. We also assess whether the encouragement emails were especially impactful on women and URM students. We complement our analysis with survey data collected from a one third of the study participants about six weeks post intervention. The survey aimed to measure students' sense of belonging, growth mindset, self-efficacy, emotional well-being, as well as their intention to change major.

[2]The mental well-being of students may have been further challenged by the fact that the semester when the program was implemented was the first fully in-person semester following the remote or hybrid instruction mandated by the COVID-19 pandemic.

[3]URM students are Black, Hispanic, or Native American students. Non-URM students are non-Hispanic white or Asian students. In our setting, 21 percent of the students in the economics major are Hispanic, and about 2 percent Black.

Our results indicate that, first of all, students opened, and possibly looked forward to receiving, the weekly encouragement emails from the department. Almost all treated students (97 percent) opened at least one of the six emails, and over 50 percent opened 5 or 6 emails. Our estimates show that the intervention had a large impact on women's performance in economics classes the semester of the intervention, with the impact being larger for URM women, who, absent the intervention, are significantly more likely to fail one or more economics classes. Specifically, we find that the encouragement emails caused URM women to fail 0.21 fewer economics classes, a 88 percent reduction from the baseline average of 0.24 failed economics classes absent the intervention. Our analysis of performance in non-economics classes indicates that the positive effects on economics class performance did not lead to a decline in performance in non-economics classes. On the contrary, the treated women also saw a decline in failed non-economics classes the semester of the intervention. Heterogeneity analysis by pre-intervention GPA confirm that the encouragement emails affected students who were more likely to be facing academic challenges, i.e., those with below median GPA.

While the treatment impacts on students' performance in economics classes weakened over time and became insignificant the semester following the intervention, the impacts on non-economics classes persisted, with the treated women – and in particular URM women – achieving more B and A grades in these classes. Our analysis of mechanisms through survey data indicate that the encouragement emails significantly and substantially increased URM women's growth mindset and emotional well-being, while having no impact on men and non-URM students.

This study adds to the body of work examining ways to attract more women and underrepresented minority (URM) students to traditionally male and white dominated fields of studies. Existing research focuses primarily on interventions targeting college freshmen or high school students before they enroll in college. These interventions typically seek to change students' perceptions of different majors by providing information about course contents and career opportunities, or by impacting students' beliefs about their own skills and likelihood of success in these fields. For these reasons, interventions promoting diversity in economics and STEM majors tend to target and/or show larger impacts on high-achieving individuals who demonstrate strong academic performance in high school or in entry-level college classes (see, e.g., Carrell et al., 2010; Gentry et al., 2023; Li, 2018). In contrast, this paper targets students, particularly women and minorities, who have chosen a male and white dominated field and may question their post-secondary education choices when facing coursework challenges. These challenges could be due to or exacerbated by difficulties connecting with a field of study where they are underrepresented, leading to low confidence, poor emotional well-being, and a limited growth mindset when facing academic setbacks.

By implementing an encouragement (randomized) intervention that aimed to increase URM students' sense of belonging and their *perceived* and *factual* ability to overcome academic challenges, our study relates to social psychology interventions that attempt to foster students' sense of belonging and growth mindsets. This is typically achieved by helping students recognize that challenges are common to all and can be overcome through positive action. The psychology interventions, which often employ students' peers who share their experiences (i.e., challenges experienced and overcome) via written or video testimonials and/or self-reflection, have shown evidence of remarkably large impacts on a variety of education outcomes, including academic performance (Yeager et al., 2019), willingness to seek academically challenging tasks/classes (Rege et al., 2021), and college retention (Walton et al., 2023). Additionally, they have been shown to enhance psychological well-being, as measured through both surveys and biomarkers (Yeager et al., 2022).

Our paper is closest to Oreopoulos et al. (2020) and Carrell and Kurlaender (2023). Oreopoulos et al. (2020) provided college students with a personalized 1-hour online exercise that used self-persuasion techniques to address academic challenges. The intervention improved emotional well-being but did not impact academic performance. Although we share with this study (and with the social psychology experiments) the broad goal of helping students succeed when facing setbacks, our intervention does not require students' "buy-in" through their active participation in online exercises; the encouragement emails were designed to foster inclusion and student well-being by sharing relatable alumni experiences and emphasizing departmental support. In this respect, our study relates closely to Carrell and Kurlaender (2023), which found that supportive emails from professors significantly improved URM students' academic performance and graduation rates. However, their "my professor cares" intervention required substantial faculty time and financial incentives, raising questions about scalability.[4] In contrast, the implementation of our intervention can leverage the existing infrastructure of a department's communication channels, without the need for faculty involvement.[5]

Our paper also adds to the broader literature on ways to promote the academic success of college students, and in particular those from URM and low socio-economic status (SES) backgrounds. These have ranged from lifting financial and informational constraints (see, e.g., Dynarski et al., 2021), to tutoring and advising programs, implemented either in person, online or via text messages (see, e.g., Bettinger and Baker, 2014; Carlana and La Ferrara,

[4]The authors note that, after the conclusion of the intervention, 42 percent of the professors in the study did not continue to reach out to struggling students via email, citing time constraints as the primary reason.

[5]The emails can be sent out through standard mail merge systems, without the need of personalizing them, beyond addressing the receiving students by their first name.

2021; Castleman and Meyer, 2020; Oreopoulos and Petronijevic, 2018).[6] The findings obtained for advising interventions, in particular, are mixed; the estimated impacts tend to be smaller or not statistically significant when moving from in-person intensive programs to online or phone-based light-touch interventions. Our encouragement intervention aligns with these programs in terms of scope and low cost. However, it uniquely aims at, and succeeds in, fostering a sense of academic support from the students' Department, without the provision of any personalized advising or coaching.

2 The Encouragement Experiment

We implemented a field experiment by randomly assigning all undergraduate students with a declared economics major in Fall 2021 to either a control group or one of three treatment groups. We have student-level administrative data on academic performance the semester of the intervention and the semester following the intervention. The data also include majoring data one year post intervention. About six weeks after the completion of the intervention, we invited all students in the sample to participate in an (incentivized) online survey.

In this section, we start by describing the university setting where the experiment took place (Section 2.1). We then provide details about the design and implementation of the field experiment (Section 2.2), followed by the administrative and survey data (Section 2.3.2). We conclude by describing our estimation strategy (section 2.4).

2.1 University Context and the Economics Major

We conducted our study at Texas A&M University (TAMU), a large public university recently designated as Hispanic Serving Institution. TAMU serves about 60,000 undergraduate students, and about 25 percent of them are Hispanic and approximately 22 percent first generation students. Over 250 students graduate every year with an economics degree. Of these, slightly over 25 percent are women and about 20 percent are students from URM backgrounds (primarily Hispanic students).

An important institutional aspect is that TAMU students are required to declare their major at the application stage. This determines their major enrollment. This implies that the set of economics major at any given point in time comprises a relatively equal number of freshmen, sophomores, juniors and seniors. Between 5 and 10 percent of students drop the major in a give academic year, but about the same number of students enters the major

[6] For a review of programs aimed at lifting non-financial barriers to student access to and success in college, see Dynarski et al. (2023).

at the same time, keeping the total quite stable from year to year.

Our study involves all undergraduate students who had declared economics as their major at the beginning of the 2021-2022 academic year, i.e., a total of 1,108 students. Table 1 provides descriptive statistics for these students. About 27 percent are women, and abut 20 percent Hispanic. Non-Hispanic white students make up about 60 percent of the majors, with the remaining 20 percent comprising Asian students (about 15 percent) and other minority students (about 5 percent), i.e., primarily Black and multiracial students. As common in the literature, we consider under-represented minorities (URMs) in the field of economics, students of Hispanic ethnicity (regardless of race) and students who are Black or Native Americans. Nearly percent of our sample consists of URM students.

2.2 The Encouragement Experiment: Design and Implementation

In early Fall 2021, we obtained the email addresses and demographics of all the economics majors from the Registrar's Office[7] and employed individual-level randomization to allocate students into one of four groups: one control group (C) and three treatment groups (T1, T2, T3). We stratified the randomization by gender, Hispanic ethnicity, race (white versus non-white) and year of study.

Students assigned to the treatment groups received weekly emails for six weeks between mid-November and mid-December on behalf of the Department of Economics. The broad objective of the emails was to foster a feeling of academic support and belonging, and to encourage students to persist with the major and seek help if/when struggling. While the emails were designed to encourage and support students facing academic setbacks, they were sent out to all students randomly assigned to the treatment groups, without differentiating by GPA or demographic characteristics. At the same time, all students continued to receive standard communications from their academic advisors and from university administrators.

We implemented three different treatment conditions, where we experimentally varied whether each email included the profile of a *peer role model*, i.e., a former student who graduated within the past four years, and whether the email also contained an encouragement message by the role model. We describe the treatments below, and provide examples of the encouragement emails in Appendix B.

2.2.1 Treatment 1: Baseline Encouragement Email

In the baseline *Email* treatment (T1), students received an encouragement email with the prominently displayed message "You belong here and you can do this," featured also in the

[7]We first obtained ethical clearance from the Texas A&M Institutional Review Board.

subject line. The email also contained a short message, which was slightly different every week, encouraging students to keep pushing when facing setbacks and to seek help if/when struggling. For instance, the first email had the following message: "As the end of the semester approaches I would like to encourage you to keep pushing. Everyone goes through rough patches in their semester, and that's you right now, there are plenty of resources available to help, whether that is academically or personally."[8]

The emails, designed with the help of a current undergraduate student, had typical Aggie colors, and, included an animated GIF of a puppy (different in every email) to capture the students' attention. At the bottom of the email, just above the dog GIF, students could find links to the First Generation Student Center, the Mental Health Counseling Center, and the Economics Tutoring Lab.

2.2.2 Treatment 2: Email & Peer Role Model

The *Email & Peer Role Model* (T2) treatment employed identical messages from the Economics Department as the *Email* treatment, except that they also included the profile of a *role model*, i.e., the name, photo, graduation year, and current job of an former students who recently graduated with an economics degree.

We chose the role models among students who had been previously interviewed by the Economics Department as part of an "Amazing Student" initiative, consisting in showcasing inspiring economics majors on the Department's website and on social media. Since our intervention aimed to target primarily students from under-represented minority backgrounds, we prioritized role models with shared minority backgrounds, i.e., primarily women and/or Hispanic.[9] With the assistance of the Department of Economics Associate Head, who had previously interviewed them, we reached out, via email and LinkedIn, to the "Amazing Students" who graduated and were showcased by the department in 2018 or 2019.[10]

[8]The brief message in the second email was: "As Thanksgiving break approaches, I encourage you to take a well-deserved break. If things this semester are not going as you had hoped, remember that [everyone goes through rough patches during their studies, and if that's you right now, there are plenty of resources to help, whether that is academically or personally.]" The sentence in brackets is repeated in all subsequent emails, and referred to as *standard sentence* below. The third email contained the following message: "As you start the last week of classes, I would like to encourage you to keep pushing. [*standard sentence*]." The fourth email had the following message: "As finals approach, I would like to encourage you to keep pushing. [*standard sentence*]." The message in the fifth message was: "As you are busy studying for your remaining finals, I would like to encourage you to keep pushing. [*standard sentence*]." The last email, sent at the end of finals, had the following message: "If things this semester did not go as you had hoped, remember that [*standard sentence*]. During the upcoming holiday season, I encourage you to take a well-deserved break and to be proud of yourself."

[9]Of the six role models, two were Hispanic women, one was a Hispanic man, one was a non-Hispanic white woman, one was an international woman of color, and one a non-Hispanic white man.

[10]We avoided later years in order to limit the possibility that the study participants would personally

The (potential) role models were invited to participate in a new initiative, consisting in encouraging current majors who may be struggling. This required agreeing to be featured in encouragement emails, as well as writing some encouraging messages that could be shared with current majors.[11]

2.2.3 Treatment 3: Email & Peer Encouragement

The *Email & Peer Encouragement* treatment builds on the *Email & Peer* treatment by adding to each email an encouragement message written by the role model. This is in addition to the departmental message, the links to helpful resources and the dog GIF, which remain the same across treatments.

2.2.4 Implementation

The emails were sent out by one of the authors using a standard mail merge system, which allowed for personalization with the recipient's first name. The first email was sent in mid-November, and the last email in mid-December (December 17th), just before the holiday break. While the person sending the email is a professor in the Economics Department, the emails were sent on behalf of the Department of Economics, with full endorsement from the Department Chair. Therefore, the sender of the email appeared as "TAMU Department of Economics." However, once the email was open, recipients could see the email address and the identity of the sender of the email.[12]

Importantly, the author who sent the email had been a professor in the department only for four semesters before the intervention and was not teaching an undergraduate class the semester of the intervention. Moreover, she had only taught a total of 19 undergraduate students the prior semesters, with two thirds of these students having already graduated at the time of the intervention. This reduced the chance that recipients would perceive the emails as individualized support from a professor they knew from previous classes, rather than recognizing the support as coming from the Department.

know the role models. A total of 23 former students were contacted.

[11] The message sent by the Department of Economics Assistant Head read: "The Department of Economics at Texas A&M is currently working on a new initiative to encourage and support students throughout the fall semester. The initiative will include a series of emails sent to students consisting of an encouraging message alongside the profile of a former amazing student. You were recognized as an Amazing Student during your time in College Station, and we would greatly appreciate it if you would be willing to continue to inspire other students. If you agree to be featured in an "encouraging email," please complete this Google Form within the next week. Thanks & Gig 'Em!" A total of 8 students agreed, and of them we chose six to be featured in each of the weekly emails.

[12] To comply with IRB requirements, the author who sent the emails had to sign the emails with her name and credentials.

2.3 Data

We first use student-level administrative data from Fall 2021 to assess whether the randomization was successful. We then describe our pre-registered outcome variables.

2.3.1 Randomization Checks

In Table 2, we test for imbalances in student characteristics across treatments. Specifically, we test for differences in student gender, Hispanic ethnicity, URM background more broadly (Hispanic ethnicity, and/or Black race, and/or Native American or Pacific Islander discend), year of study, GPA at the beggining of Fall 2021, and numbers of economics and non-economics courses students enrolled in, as of August 2021, before the implementation of the intervention. We see no significant differences in any student characteristic, confirming that the stratified randomization was successful.

The control means in Table 2 reveal that the students in the sample have an average GPA of 3.286 and are enrolled in 1.9 economics classes and 2.5 non-economics classes on average in the semester of the intervention. As noted when describing Table 1, 27 percent of the students are women, and 20 percent Hispanic. The percentage of URM students is sightly larger, at 23 percent, as it also includes racial minorities.

2.3.2 Outcomes: Administrative Data and Survey Measures

Our pre-registered primary outcomes of interest are measures of academic performance in economics classes, such as average grade and likelihood of failing one or more class, the semester of the intervention and the following semester/s. A primary outcome of interest is major retention, i.e., student's decision to stay with the major as opposed to changing major. In the longer term, we are interested in college graduation and economics major at graduation.

Administrative Transcript Data: We obtained student-level administrative data for all students in the sample for the semester of the intervention and the semester after the intervention. For each student, we have information on GPA before the intervention, number of economics and non-economics classes taken the semester of the intervention and the one following the intervention, as well as the grade obtained in each class. We also know students' declared major at the beginning in Fall 2022, one year post intervention, for the students still enrolled at that time.

Survey Data: In addition to the administrative data, we have survey data for a subset

(about one third) of the students. We sent invitations to participate in an online anonymous survey to all the students via email between January and February 2022, approximately six weeks after the intervention. We incentivized survey completion with $10 gift cards, which we paid to all survey participants.[13] We designed the survey with the aim of identifying the driving mechanisms behind the potential impact of the intervention. We pre-registered and pre-specified the measurement of five survey measures: 1) Sense of Belonging, 2) Growth Mindset, 3) Self-efficacy, 4) Emotional Well-being, and 5) Self-reported likelihood to change major. We construct indexes for each survey outcome by first standardizing the response to each question (or "item") entering the index around the mean and the standard deviation of the answer given by the students in the control group. We then aggregate each item by constructing an inverse covariance weighted index, following Anderson (2008). Table A.1 presents the full list of survey questions that we pre-specified we would use for each survey-generated outcome.

We designed the survey questions entering each index based on previous work in social psychology, education and economics. The Sense of Belonging index aggregates answers to 7 questions, among which: "I feel that the department of economic values students like me," "I found it hard to connect with classmates in my economics classes" and "I feel different from the typical economics student." The Self-Efficacy index aggregates answers to 5 questions, including: "How confident are you that you can learn the material presented in your current economics classes" and "How confident are you that you will graduate from Texas A&M with a 4-year degree?." The Growth Mindset Index aggregates answers to four questions including: "If I do poorly in an economics assignment or exam, I start questioning my ability to major in economics" and "If you encounter difficulties in an economics course, what strategy do you think you will most likely take to improve your grade?." The latter question asked students to choose between seven possible strategies: 1) Visit office hours; 2) Study with classmates; 3) Find a tutor; 4) Reach out to my academic advisor; 5) Seek academic coaching/studying skill help; 6) Drop the class; and 7) None of these, I keep studying on my own. For the purpose of the index construction, we code answers 1 to 5 as a "1" and answers 6) and 7) as a "0."

The emotional well-being index aggregates 5 questions comprising the validated "Mental Health Inventory-5" of the 36-item Short Form Health Survey (SF-36) (Ware Jr and Sherbourne, 1992). The questions ask how often in the previous two months the respondent had been happy (question 1), very nervous (question 2), "felt so down in the dumps that nothing could cheer them up" (question 3), calm and peaceful (question 4) and downhearted and

[13]We designed the survey through Qualtrics and employed a payment system that preserved subject anonymity.

blue (question 5).

As part of the pre-registered survey questions, we also have a measure of self-reported intention to change major.

2.4 Estimation Strategy

We follow our pre-analysis plan and test the intent to treat (ITT) effects of the encouragement emails by estimating equation 1 below:[14]

$$Y_i = \beta_0 + \beta_1 T_{1i} + \beta_2 T_{2i} + \beta_3 T_{3i} + \delta \mathbf{X}_i + u_i \tag{1}$$

where Y_i is student i's outcome (generated by administrative or survey data), T_{1i} is an indicator variable that equals 1 if student i was assigned to the *Emails* treatment. Similarly, T_{2i} is an indicator variable for the *Email & Peer* treatment, T_{3i} is an indicator variable for the *Email & Peer Encouragement* treatment. The control treatment is the omitted group. We include $\mathbf{X}$, a vector of demographic controls, i.e., gender, race, and ethnicity. We also control for year of study indicators, GPA, and total number of Economics classes taken at the time of the intervention. β_1, β_2, and β_3 capture the impact of the treatments on the full sample.

In order to test whether there are heterogeneous treatment effects by student gender, we estimate equation 2 below, where we include interactions between each treatment dummy and an indicator equal to 1 if the student is a woman, and equal to 0 if the student is a man:

$$\begin{aligned} Y_i = &\beta_0 + \beta_1 T_{1i} + \beta_2 T_{2i} + \beta_3 T_{3i} + \beta_4 T_{1i} * Female_i + \beta_5 T_{2i} * Female_i \\ &+ \beta_6 T_{3i} * Female_i + \gamma Female_i + \delta \mathbf{X}_i + u_i \end{aligned} \tag{2}$$

where $Female_i$ is a dummy variable equal to 1 if student i is a woman. In this specification, β_1, β_2, and β_3 indicate the impacts of T1, T2, and T3 on men, respectively, while β_4, β_5, and β_6 capture the differential impacts of each treatment on women. We also report p-values generated by Wald tests for linear combinations of the estimated coefficients of interest, e.g., for $\beta_1 + \beta_4 = 0$, for $\beta_2 + \beta_5 = 0$, for $\beta_3 + \beta_6 = 0$, to assess whether the treatments have a significant impact on women.

In order to investigate whether the intervention impacted URM students differently, in addition to student gender, we also estimate equation (2) separately for URM and for Non-URM students. Due to our limited sample size, when doing so, our preferred specification

[14] Our estimation strategy follows our Pre-Analysis Plan (PAP). Whenever we deviate for our PAP, we note that in the paper.

is one where all treatments are combined in an "Any Treatment" indicator, which is set to 0 for students in the Control group and to 1 for all students who were sent emails in Fall 2021, as shown in equation (3) below:[15]

$$Y_i = \beta_0 + \beta_1 AnyT_i + \beta_2 AnyT_i * Female_i + \gamma Female_i + \delta \mathbf{X}_i + u_i \tag{3}$$

where $AnyT$ is an indicator for being assigned to one of the treatment groups as opposed to the control group, β_1 indicates the impact of the encouragement emails (in any treatment) on men, and β_2 the differential impact of the intervention on women.

Since the intervention relied on information that students could access only if they decided to open the email/s, the equations above allow us to estimate intent-to-treat effects. For each student, we are able to track whether they opened each email, and compute the total number of emails they opened. Thus, we are able to also estimate the Local Average Treatment Effects (LATE) by estimating a two-stage least squares regression, where we define a student as "fully treated" if he or she opened all six emails, and estimate the following system of equations:

$$\begin{aligned} Treated_i &= \tau + \theta AnyT_i + \gamma \mathbf{X}_i + \eta_i \\ Y_i &= \beta_0 + \beta_1 \hat{Treated}_i + \gamma X_i + \delta \mathbf{X}_i + u_i \end{aligned} \tag{4}$$

In the first stage, the full take-up of the intervention (i.e., the opening all six emails) ($Treated_i$) is predicted by the instrument, which is the initial assignment to treatment and control groups ($AnyT_i$). In the second stage, the outcomes of interest is regressed against the treatment take-up, as predicted in the first stage. The estimate of β_1 is the local average treatment effect.

3 Results

We start by checking whether the students in the treatment group opened the emails sent to them on behalf of the departments. Overall, the take-up rate of the encouragement intervention was higher than we anticipated. Nearly all students (97 percent, with no differences across treatments) opened at least one of the six emails. Panel (a) of Figure 1 shows the percentages of students who opened each of the six emails in each treatment, and

[15] We note that we did not pre-specified the analysis combining the three treatments into one indicator in our Pre-Analysis Plan.

panel (b) compares the cumulative distributions of the total number of opened emails across treatments. About 80 percent of the students opened the first email, and while the email opening rate declined slightly over time, especially for T3, it remained above 60 percent for all treatments.[16]

Figure 2 shows the full distributions of opened emails. We see that the majority of the students in all treatments opened 5 or 6 emails (the median number is 5 in all treatments), and over one third of all students opening all six emails.[17] Our analysis of the determinants of email opening, shown in Table A.2 in Appendix A, reveals that women are significantly more likely to open each of the six emails, and are about 9 percentage point (i.e., about 25 percent) more likely to open all six emails. We do not see significant differences in opening rates by student URM status, or year of study. The opening rate is higher in T2 for the first two emails, and lower in T3 for the last two emails. The likelihood of opening all 6 emails - which defines our fully treated student status - is not different across the three encouragement treatments.

3.1 Treatment Effects on Academic Performance

We first evaluate the impact of the encouragement emails on performance in economics classes the semester of the intervention. Our primary outcomes of interest are average grade in economics classes and number of failed economics classes.[18] Average grade is measured on a 4.0 scale, as standard in university settings. Besides average performance in economics classes, we focus specifically on non-passing grades because the intervention was designed to help struggling economics majors overcome academic challenges, therefore we expect it to impact marginal students in particular. In Table A.3 in Appendix A, we report the results obtained when looking at the right tail of the grade distribution, i.e., at the likelihood of obtaining A or B grades in economics classes.

3.1.1 Immediate Impacts: The Semester of the Intervention

Table 3 reports the coefficients generated by estimating equation (1) and equation (2) described in Section 2.4. We first note that, absent the treatments, women perform significantly

[16]Figure A.1 in Appendix A replicates Figure 1 separately for URM and non-URM students. It shows that the opening rate was the same across treatments for URM students. It was lower in T3 (*Email & Encouragement* for non-URM students.

[17]Students opened 4.29 emails on average in T1, 4.55 in T2, and 4.05 in T3.

[18]Our analysis of academic performance excludes classes that were Q-dropped, i.e., classes that are dropped by students prior to pre-defined deadlines, and with no effects on their GPA. A total of 188 economics classes and 126 non-economics classes were Q-dropped by the students in our sample in Fall 2021. They represent about 8% and 4% of all economics and non-economics classes (respectively) taken by the study population that semester.

worse than men in economics classes; they get lower average grades and fail more classes on average; they obtain 0.20 of a point less in their average grade, and fail 0.097 more classes (control averages are 3 for grade and 0.128 for failed classes). We also note that the number of failed classes is also indirectly measuring the likelihood of failing an economic class, since the almost totality of students only fail one class during the semester.

The analysis of the treatment effects on the full sample, in column 1, shows no impact of the three email treatments on average grade in economics classes. However, the analysis of differential effects by student gender, in column 2, shows evidence of marginally significant positive impacts of the *Email & Peer* and *Email & Peer Encouragement* treatments on women's average grades in economics classes, but no impact on men. Similarly, we see evidence of a negative impact of the treatments on the number of economics classes failed by women. Specifically, the encouragement emails lead to women failing between 0.07 (in T1, not significant) and 0.11 (in T3) fewer classes, over a control mean of 0.128 failed classes, i.e., between a 55 percent and an 85 percent decline in the number of failed economics classes. The impact seems larger for the emails that featured peer role models, and especially for the *Peer & Encouragement* treatment.

When we look at the intersection of gender and minority status, by estimating the same equations for the URM student population, in columns 5 to 8, we find even stronger evidence of treatment effects on women. The negative impact of the encouragement emails on failed economics classes ranges from 0.18 (for T2) to 0.24 (for T3). These are large effects, nearing a 100 percent decline, given the control mean of 0.235 failed classes observed among URM women.

Finally, we examine the treatment impact on the non-URM students, i.e., non-Hispanic white, Asian and international students. While the directions of the treatment effects remain in line with our expectations - i.e., positive for average grade and negative for failed classes - the size of the observed treatment effects are substantially lower, and only T3 is close to statistical significance ($p = 0.099$) in its impact on non-URM women. This indicates that the treatment effects observed in the full student population are driven by URM women.

Motivated by our relatively small size (especially given our interest on treatment impacts on under-represented minority students) and by the lack of large (in terms of magnitude and statistical significance) differences between the impacts of the three variations of the encouragement emails, we proceed to estimate equation (3) described in Section 2.4. Specifically, we create a treatment indicator equal to 1 for students assigned to any of the treatment groups, and 0 for those in the control group. We then replicate the analysis and report the estimated coefficients in Panel A of table 4. In addition, we plot the estimated coefficients, for the full student sample and for each subsample of interest, in the top panel of Figure

3. The estimates confirm the positive impact of the treatments on women's average grade and, more so, the negative impact on number of failed economics classes. Specifically, the encouragement emails increase all women's grade by 0.11 points of a grade ($p = 0.12$), and lead to 0.09 fewer failed classed ($p = 0.021$), with the impacts being driven by URM women, who experience 0.21 fewer failed classes as a result of the intervention ($p = 0.017$).

In Panel B of Table 4, we report LATE estimates from two-stage least squares regressions, described in Section 2.4. Here, we instrument the full take-up of the intervention, i.e., the decision to open all six emails (which applies to one third of the students assigned to treatments), with the initial random treatment assignment. As expected, the LATE estimates are substantially larger than the ITT estimates shown in Panel A of the same table. They suggest that the encouragement emails caused the treated women to fail 0.20 fewer classes ($p = 0.025$) and the URM women to fail 0.46 fewer classes ($p = 0.027$).

The analysis of the right tail of the grade distributions shows that the intervention had no significant impact on the number of economics classes passed with an A or a B, or the likelihood of getting at least one B or an A in an economics classes, as displayed in in Table A.3 in Appendix A.

An important question is whether the intervention caused students to redirect time from non-economics to economics classes. If this were the case, we would see a negative impact of the encouragement emails on academic performance in non-economics classes. Table 5 and the bottom panel of Figure 3 display the estimated treatment effects on average grade in non-economics classes and number of non-economics classes failed the semester of the intervention. Overall, we see evidence of a positive impact of the intervention on average grade in non-economics classes – true for both men and women – and a negative impact on number of non-economics classes failed by women. When looking at the impacts separately for URM and non-URM students, we see that in both sub-samples the estimated coefficients are consistent with the desired impact of the intervention (positive on average grade and negative on failed classes) but they are statistically significant only in the non-URM sub-sample. When examining the three treatments separately, in Table A.4 in Appendix A, we see that the largest impacts are coming, once again, from the *Email & Peer Encouragement* treatment (T3).

In summary, the encouragement emails significantly improved the academic performance of women in economics classes. The impact is larger among URM women, who experience a substantial decline in their likelihood of failing one or more economics classes. This did not come at the expense of their performance in non-economics classes. On the contrary, grades in non-economics classes tended to improve, with the largest impacts seen among non-URM women.

We conclude this section by conducting some exploratory (not pre-registered) additional analyses of heterogeneous treatment effects by students' pre-intervention GPA. While the intervention involved all economics majors, it was designed to help and support struggling students. We therefore expect the treatment effects to be concentrated among, or be larger for, students with relatively low GPA. This is indirectly confirmed by our primary analysis, i.e., the findings of no impacts on A and B grades, and significant impacts on passing versus failing grades. Next, we estimate the treatment effects for students with below median and above median GPA, with the median being 3.375 in our sample. The results, reported in Table A.5 generate a few important insights. First, we see that in the top half of the GPA distribution, there are no gender differences in academic performance absent the intervention, and the encouragement emails have no significant impacts on men or women. Second, among students with below median GPA, women fare worse than men absent the intervention, but see a boost in their average grade in economics classes after receiving the encouragement emails – this being true for T1, T2 and T3 equally – to the point where the gender gap in average grade disappears. We also see that men are unaffected by the intervention, and that the impact on women's average grade is driven by the intervention lowering their propensity to fail economic classes. This confirms our primary results displayed in Table 4 and Figure 3.

Finally, we examine whether the encouragement emails were more impactful on younger (years 1 and 2) or older student cohorts (years 3 and 4). While the estimated coefficients have the expected sign in both student subsamples, they are statistically significant only for women in years 3 and 4, as shown Table A.7 in Appendix A.

3.1.2 Subsequent Impacts: The Semester *post* Intervention

Next, we examine whether the impact of the encouragement intervention lasted beyond the implementation semester. We replicate our primary analysis for academic performance in economics classes taken in Spring 2022. Our outcomes of interest remain the average grade in economics and non-economics classes, and the number of failed classes.[19] In addition, we have data on students' majors at the beginning of Fall 2022, i.e., one year after the semester of the intervention. This allows us to test whether the encouragement emails had any impact on students' likelihood to still be an economics major the year after the intervention. We note that our sample size becomes smaller when we analyze outcomes observed in the semesters

[19] As before, our analysis of academic performance excludes classes that were Q-dropped, i.e., classes that are dropped by students prior to pre-defined deadlines, and with no effects on their GPA. A total of 134 economics classes and 116 non-economics classes were Q-dropped by the students in our sample in Spring 2022, with no differences between treatment and control students. They represent about 7% and 4% of all economics and non-economics classes (respectively) taken by the study population that semester.

following the intervention. This is because some students graduate in December, some in May, and others decide not to re-enroll, i.e., they drop out of college or take a temporary hiatus.[20]

Before estimating treatment effects on academic performance, we examine whether the intervention had any impact on the number of economics and non-economics classes students decided to take in Spring 2022. The estimates, displayed in Table A.8, shows a positive, but not statistically significant, impact of the intervention on the likelihood of enrolling in at least one economics class, and on the number of economics classes for the full sample and the male sample. The interaction of the treatment indicator and the female dummy presents a negative coefficient, which is statistically significant for the number of economics classes taken by URM women. This likely reflects the direct negative impact of the intervention on the number of failed economics classes the previous semester, which reduced the number of economics classes URM women need to (re-)take in Spring 2022.

The analysis of the impact of the intervention on academic performance in economics classes, displayed in Tables 6 for the individual treatments, and in Table 7 and the top panel of Figure 4 for "Any Treatment," suggests that the impacts of the emails did not persist beyond the semester of the intervention. While the estimated coefficients for the treatment indicator remain positive for average grade and negative for number of failed economics classes, especially for URM women, they are smaller in magnitude (when compared to the coefficients obtained in Fall 2021) and not statistically significant. However, we find that the intervention had substantial spillover effects on academic performance of URM women in non-economics classes, where we see an increase in average grade and number of A or B grades in Spring 2022. This is shown in Table 8 and in the bottom panel of Figure 4.

Finally, for the students for which we have data at the beginning of Fall 2022, i.e., 865 students,[21] our analysis shows that the treatment did not have a statistically significant impact on the likelihood of keeping economics as a major. However, this may be due to the high retention rate observed among economics majors between Fall 2021 and Fall 2022 absent the intervention (nearly 90%), which leaves little room for the treatment to have a significant impact.

Overall, while the immediate benefits of the intervention on the academic performance of women, and in particular URM women, in economics classes diminished after the ini-

[20] A total of 34 students who are in our Fall 2021 sample did not enroll in any courses in Spring 2022: 4 students from year 1, 5 from year 2, 10 from year 3, and 15 from year 4. When looking at the major at the beginning of Spring 2022, we restrict the analysis to students enrolled that semester.

[21] These are the students who did not graduate and did not withdraw from the University. A total of 233 students who are in our Fall 2021 sample did not enroll for any courses in Fall 2022: 10 from year 1, 12 from year 2, 25 from year 3, and 186 from year 4. This implies that the vast majority of the students for which we have no data in Fall 2022 have likely graduated at the end of the 2021-2022 academic year.

tial semester, we see notable long-term positive effects in non-economics courses for this population.

3.2 Mechanisms: Survey Outcomes

About six weeks after the conclusion of the encouragement experiment, in late January 2022, we invited all students in the sample to participate in a short 10 minute online survey. The students were contacted via email and received a 10 dollar gift card for completing the anonymous survey. Our primary objective when designing the survey was to study the mechanisms beyond the treatment impacts. Specifically, we aimed to evaluate whether the intervention affected emotional or psychological factors, study strategies, and willingness to persevere when facing setbacks.

Recall that the encouragement emails' main (bolded) message was "You belong here and you can do this," which aimed to increase students' sense of belonging and self-efficacy. In addition, the additional text in the email (slightly different every week) urged students to not let academic setbacks discourage them, and to "keep pushing," i.e., it aimed to reinforce students' growth mindset. The peer encouragement messages contained similar content. In addition, all emailed had links to valuable student resources, i.e., the Tutoring Lab, the Mental Health Student Center and the First Generation Student Center.

Since we cannot link our de-identified student data with data on the use of these resources, we cannot assess whether the intervention impacted student use of the linked resources. However, we can assess whether the encouragement emails impacted survey-generated measures of belonging, growth mindset, self-efficacy and emotional well-being. We designed the online questionnaire to allow us to generate such measures, and we pre-specified the survey questions that would enter each index. We describe these questions in Section 2.3.2 and we summarize them in Table A.1. Given that we have four survey-generated outcomes, each identifying a different mechanism for the treatment effects, we address the potential bias caused by multiple hypothesis testing by aggregating all survey indexes into one "well-being" index, also standardized around the value observed in the Control group. Thus, our regression tables for the survey outcomes report estimates for the aggregated index, as well as the four individual indexes. In addition, we include estimates for students' intention to change major, i.e., our fifth pre-registered survey-generated outcome of interest.

In what follows, we first assess students' selection into the survey and conduct balance tests for the survey sample. We then discuss the estimated treatment effects on each survey-generated outcome.

3.2.1 Selection into the Survey

Out of the 1,098 economics majors in our sample, a total of 373 (34 percent) participated in the anonymous survey, and 317 of them (29 percent of total) provided complete answers, including non-mandatory self-reports of their GPA.

We start our analysis of the survey data by examining students' selection into the survey. An important caveat is that, since the administrative transcript data used for our primary analysis are de-identified, we are unable to merge survey and transcript data. However, we are able to merge official student demographics data with the survey data.[22] We start by testing whether student demographics and treatment assignment predict the decision to participate in the survey. The only important determinant of survey participation is student gender, with women being nearly 20 percentage point more likely to fill in the survey. Reassuringly, the students assigned to receive the encouragement emails are not more likely to answer the survey questions.[23] This analysis is reported in Table A.11 in Appendix A.

Next, we test whether, in the survey sample, student characteristics differ across treatments. Table 9 shows that they do not. Specifically, gender, URM status, year of study and (self-reported) GPA are all balanced across the treatment arms. Finally, we test whether, for the students assigned to any of the treatments, there is a correlation between their propensity to open the encouragement emails and the likelihood of participating in the survey. Figure A.2 displays the distributions of emailed opened by the full sample and the survey sample, for each treatment. It shows that survey respondents are concentrated in the right tails of the opened email distributions, i.e., they are more likely to have opened five or six emails. This suggests that survey respondents assigned to the encouragement treatments are more likely to have fully engaged with the intervention, making them particularly valuable for investigating the mechanisms underlying the treatment effects discussed in the previous section.

3.2.2 Impacts on Survey Outcomes

A first glance at the survey data, in Table 10, generates a few important insights. First, women score worse in all the survey outcome measures. In particular, they have lower sense of belonging (not statistically significant), lower growth mindset (0.147 standard deviations less than men), lower self-efficacy (not statistically significant) and lower emotional well-being (0.37 standard deviations less than men). This results in women displaying less overall

[22] We are able to do so by using the official transcript data that we used for the initial randomization of students into treatment groups, and for sending the encouragement emails.

[23] The only exception is women assigned to T1, who seem significantly less likely to participate than control women.

well-being than men. We do not see the same patterns for URM status, i.e., URM students do not seem to fare worse than non-URM students, when controlling for student gender. Table 10 also reports the overall treatment effects on the survey measures, with not notable aggregate impacts, with the exception of a large positive effect observed for T3 (*Email & Peer Encouragement*) on the Growth Mindset index.

Next, we examine whether women, and in particular URM women, were impacted differently by the intervention, i.e., whether the heterogeneous treatment effects observed in our analysis of academic performance are also reflected in the survey data. In order to conduct this analysis, we combine all treatments in one "Any Treatment" indicator, and follow the same estimation strategy as for the analysis of administrative data.[24] The estimated treatment effects, displayed in Figure 5 (see also Table A.12), show evidence of a significant impact of the encouragement emails on URM women's growth mindset and emotional well-being, resulting in an overall increase in their aggregate well-being by about 0.28 standard deviations from the Control mean. We see no significant impacts on men and non-URM students.

Despite coming from a smaller sample, these findings are important for several reasons. First, they confirm our primary results, which indicated that the encouragement emails had a more pronounced impact on the academic performance of URM women. This is the set of students who, according to on our data, are more likely to face academic challenges as economics majors. Second, the survey results identify the main mechanisms driving this effect: enhanced emotional well-being and stronger growth mindset.

For each survey index, we conducted additional exploratory analyses – displayed in Tables A.14 to A.17 in Appendix A – where we estimate the treatment effects on each item entering the index. The coefficients obtained for the components of Growth Mindset indicate that the treated URM women primarily saw an increase in "confidence in own ability and potential." The analysis for the Emotional Well-being index suggest that the encouragement emails significantly reduced the occurrence of bad feelings or emotions, specifically "nervousness" and "feeling downhearted and blue."

[24] Due to the small sample size, when examining the intersection of gender and URM status, we deviate from our preferred specification, which would require us to split the sample by student URM status. We instead report estimates generated by interacting the "Any Treatment" indicator with the URM status dummy variable, and splitting the sample by student gender. We report estimates generated by the preferred specification in Table A.13 in Appendix A. The resulting estimates are qualitatively equivalent, but noisier.

4 Conclusion

We implemented an intervention which consisted in sending six encouragement emails to randomly selected economics majors during the fall semester of 2021 on behalf of the economics department. The emails aimed to bolster the sense of belonging, self-efficacy and growth mindset of women and students who are under-represented in the field of economics. Our design was driven by the existing literature highlighting that URM students tend to question their choice of major and/or may face more severe academic or emotional challenges while in college.

Overall, our results show that the encouragement emails significantly improved the academic performance of women in economics classes. This effect was particularly strong among URM women, who, absent the intervention, were more likely to fail one or more economics classes. Importantly, the intervention did not harm women's performance in non-economics classes; in fact, grades in these courses tended to improve, especially among non-URM women. While the immediate impact of the intervention on academic performance in economics classes diminished after the semester of the intervention, we see lasting positive impacts on URM women's performance in non-economics courses, suggesting long-term impacts on their GPA. Our analysis of mechanisms, through survey data, confirms that the intervention primarily benefited URM women by enhancing their growth mindset and by increasing their emotional well-being.

Our study has important policy implications. It highlights the value of targeted interventions in addressing gender and racial disparities in academic performance, especially in fields where certain groups are underrepresented. Our findings underscore the importance of fostering an academic environment where minority students can feel supported and able to overcome setbacks. We show that periodic encouragement emails coming from the Department, potentially incorporating positive and uplifting content (e.g, GIFs of puppies) and messages from relatable peers, can serve as a cost-effective strategy to achieve this goal.

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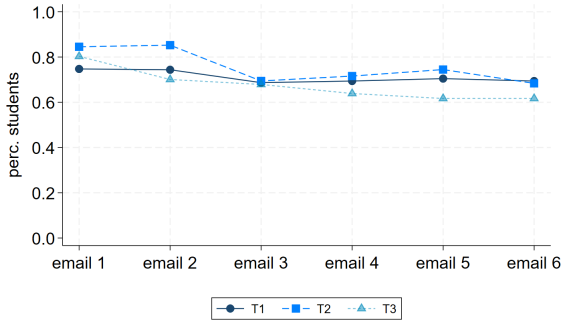
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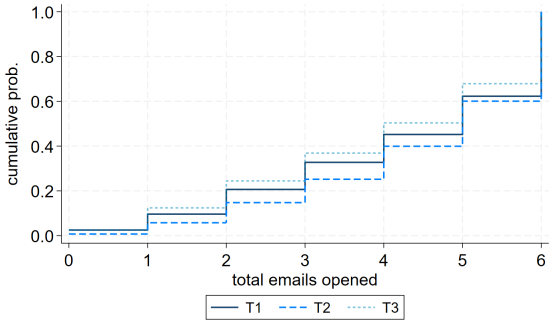
Figures and Tables

Figure 1: Percentage of students opening the emails

(a) Students opening weekly email

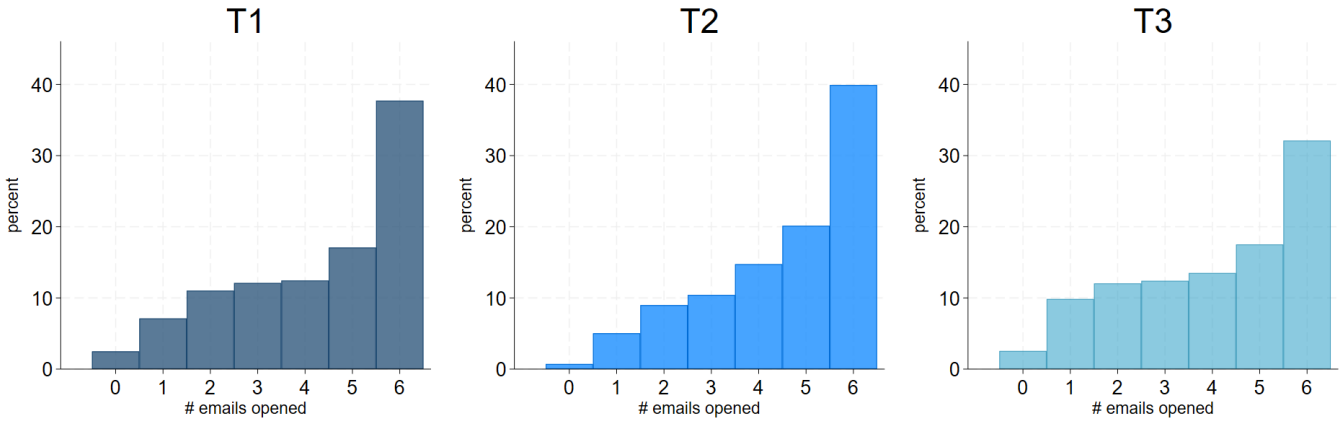


(b) Cumulative distribution



Notes: The figure in panel (a) shows the percentages of students who opened each email, by treatment. The figure in panel (b) shows cumulative distributions of the total number of emails opened by students in each treatment. T1 refers to the *Email* treatment; T2 refers to the *Email & Peer* treatment, and T3 refers to the *Email & Peer Encouragement* treatment. Kolmogrov-Smirnov tests of equality of distributions generate the following p-values: for T1 vs. T2, p-value of 0.375; for T1 vs. T3, p-value of 0.745; for T2 vs T3, p-value of 0.041.

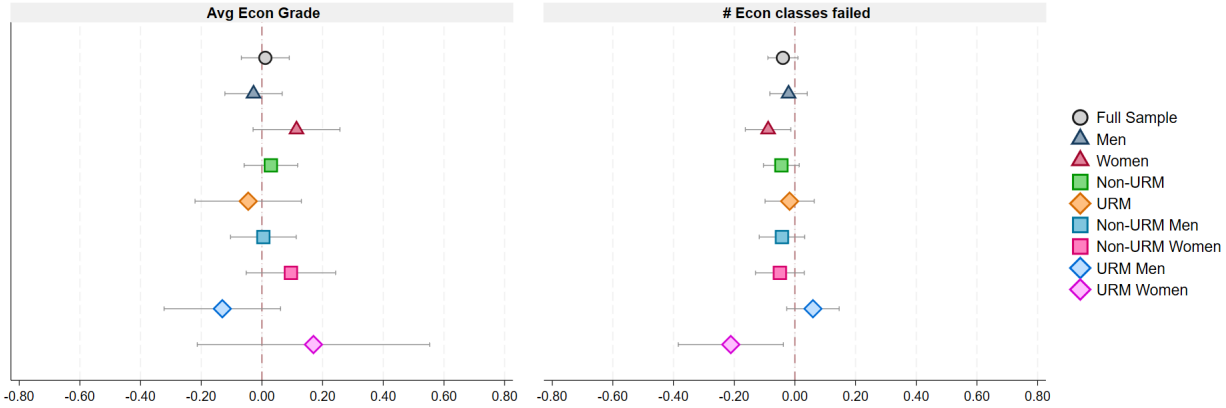
Figure 2: Number of emails opened by treatment



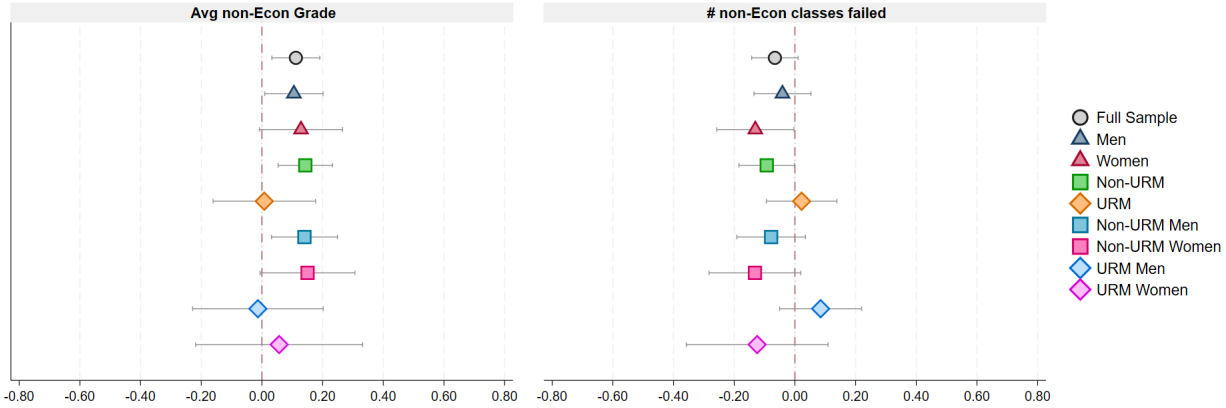
Notes: The figure shows the distribution of the total number of emails opened by students in each of the three treatments. T1 refers to the *Email* treatment; T2 refers to the *Email & Peer* treatment, and T3 refers to the *Email & Peer Encouragement* treatment.

Figure 3: Treatment Effects in Fall 2021
(Any Treatment)

(a) Economics Classes



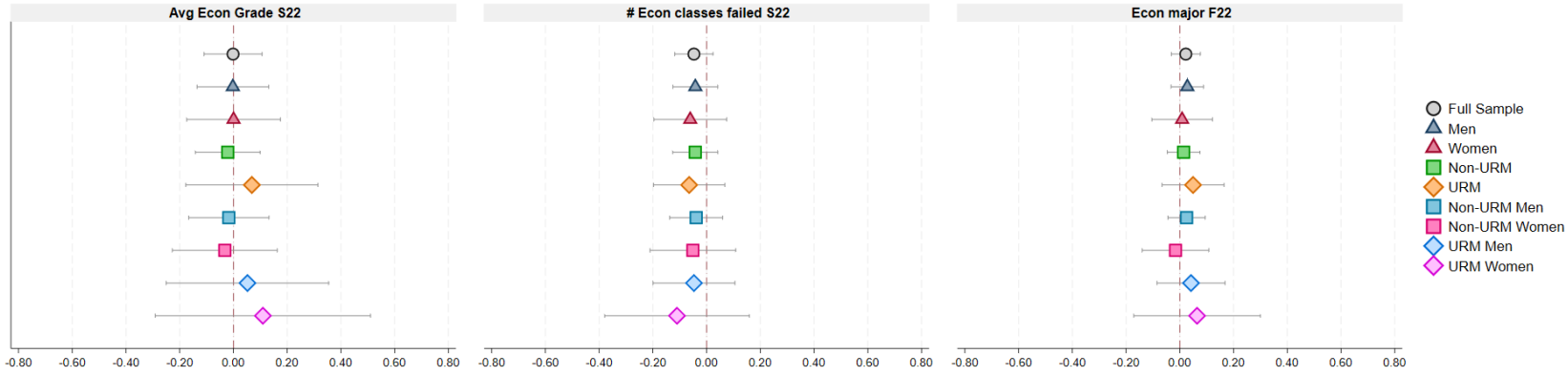
(b) Non-Economics Classes



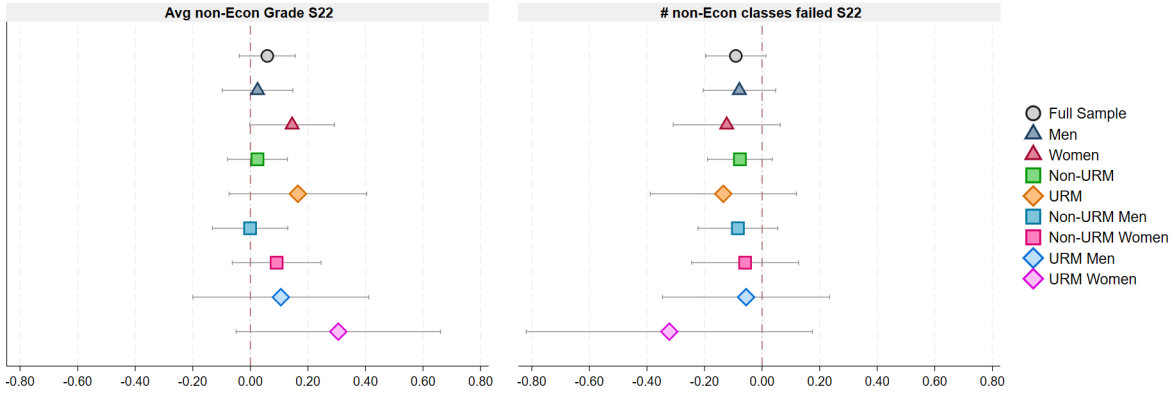
Notes: The top panel presents the estimated treatment effects – combining the three treatments into an "Any Treatment" indicator – for the average grade obtained in Economics classes and the number of Economics classes failed in Fall 2021. The bottom panel presents the estimated treatment effects for the average grade obtained in non-Economics classes and the number of non-Economics classes failed in Fall 2021. Error bars represent 95% confidence intervals. Controls include Female, URM, year of study, GPA pre-intervention, number of Economics and non-Economics classes taken in Fall 2021. Table 4 reports the full regression estimates for Economics classes. Table 5 reports the full regression estimates for non-Economics classes.

Figure 4: Treatment Effects *post* Fall 2021
(Any Treatment)

(a) Economics Classes



(b) Non-Economics Classes



Notes: The top panel presents the estimated treatment effects – combining the three treatments into an "Any Treatment" indicator – for the average grade obtained in Economics classes, the number of Economics classes failed in Spring 2022, and the likelihood of being an Economics major in Fall 2022. The bottom panel presents the estimated treatment effects for the average grade obtained in non-Economics classes and the number of non-Economics classes failed in Spring 2022. Error bars represent 95% confidence intervals. Controls for all regressions include Female, URM, year of study, and GPA pre-intervention. Controls for the Spring 2022 academic outcomes include the number of Economics and non-Economics classes taken in Spring 2022. Table 7 reports the full regression estimates for Economics classes. Table 8 reports the full regression estimates for non-Economics classes.

Figure 5: Treatment Effects on Survey Outcomes
(Any Treatment)



Notes: The figure presents the estimated treatment effects – combining the three treatments into an "Any Treatment" indicator – for the pre-specified survey outcomes, described in Table A.1. The "Aggregated Well-being" index aggregates the Sense of Belonging, the Growth Mindset, the Self-Efficacy and the Emotional Well-being indexes. Each index is standardized around the Control mean; the estimated coefficients are therefore expressed in standard deviations from the Control mean. Error bars represent 95% confidence intervals. Controls for all regressions include Female, URM status, self-reported GPA, and academic year. Table A.12 reports the full regression estimates. A total of 373 students (34 percent of total) participated in the survey.

Table 1: Sample Composition - Fall 2021

	Men	Women	Difference
All students	0.726	0.274	-0.452***
	(0.446)	(0.446)	[0.000]
Non-Hispanic White	0.622	0.548	-0.074**
	(0.485)	(0.499)	[0.025]
Hispanic	0.213	0.196	-0.017
	(0.410)	(0.398)	[0.530]
Asian	0.113	0.179	0.066***
	(0.317)	(0.384)	[0.004]
Black	0.016	0.023	0.007
	(0.127)	(0.151)	[0.443]
Multiracial	0.030	0.050	0.020
	(0.171)	(0.218)	[0.115]
International	0.004	0.003	-0.000
	(0.061)	(0.058)	[0.914]
Freshmen	0.164	0.239	0.075***
	(0.371)	(0.427)	[0.004]
Sophomores	0.236	0.236	-0.000
	(0.425)	(0.425)	[1.000]
Juniors	0.294	0.262	-0.031
	(0.456)	(0.441)	[0.308]
Seniors	0.306	0.262	-0.044
	(0.461)	(0.441)	[0.157]
Observations	797	301	1098

Notes: This table reports mean and standard deviation (in parentheses) of student characteristics for men and women majoring in Economics in Fall 2021. Column 3 reports estimated coefficients from a regression where the corresponding student characteristic is regressed on an indicator equal to 1 for women and 0 for men. Standard errors are in brackets *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2: Balance Tests

	Female	URM	Hispanic	Year 1	Year 2	Year 3	Year 4	GPA	# Econ	# NonEc
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Email (T1)	0.000	0.016	0.013	0.006	-0.002	-0.011	0.007	0.023	-0.083	0.095
	(0.038)	(0.036)	(0.035)	(0.033)	(0.036)	(0.039)	(0.039)	(0.047)	(0.087)	(0.106)
Email & Peer (T2)	0.010	0.010	0.010	0.007	0.003	0.003	-0.012	-0.025	-0.043	0.035
	(0.038)	(0.036)	(0.035)	(0.033)	(0.036)	(0.039)	(0.039)	(0.047)	(0.086)	(0.103)
Email & Peer Encouragement (T3)	-0.002	-0.009	0.002	0.021	0.002	-0.013	-0.009	-0.000	-0.079	0.048
	(0.038)	(0.036)	(0.035)	(0.033)	(0.036)	(0.039)	(0.039)	(0.049)	(0.082)	(0.108)
Observations	1098	1098	1098	1098	1098	1098	1098	1098	1098	1098
Control Mean	0.272	0.232	0.202	0.176	0.235	0.290	0.298	3.286	1.864	2.489
T1 = T2 = T3 = 0 (F p-val)	0.990	0.908	0.979	0.940	0.999	0.970	0.960	0.783	0.746	0.842
T1 = T2 (F p-val)	0.800	0.880	0.941	0.991	0.888	0.727	0.626	0.300	0.650	0.554
T1 = T3 (F p-val)	0.951	0.494	0.758	0.669	0.906	0.954	0.675	0.625	0.968	0.655
T2 = T3 (F p-val)	0.755	0.597	0.817	0.679	0.981	0.685	0.946	0.609	0.660	0.903

Notes: This table reports OLS estimates where the demographic characteristics, year of study, GPA and the number of Economics and non-Economics classes taken in Fall 2021 are regressed on treatment indicator dummy variables. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Treatment Effects on Econ Outcomes in Fall 2021
(All Treatments)

	Full Sample				URM				Non-URM			
	Average grade in Econ classes		Number of Econ classes failed		Average grade in Econ classes		Number of Econ classes failed		Average grade in Econ classes		Number of Econ classes failed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Email (T1)	-0.013	-0.040	-0.016	0.005	-0.083	-0.146	-0.030	0.044	0.005	-0.009	-0.011	-0.002
	(0.050)	(0.060)	(0.032)	(0.041)	(0.106)	(0.124)	(0.046)	(0.051)	(0.057)	(0.069)	(0.040)	(0.050)
Email & Peer (T2)	0.034	-0.007	-0.059**	-0.051	0.020	-0.066	-0.013	0.058	0.042	0.012	-0.070*	-0.080
	(0.048)	(0.057)	(0.029)	(0.036)	(0.111)	(0.125)	(0.055)	(0.064)	(0.053)	(0.065)	(0.034)	(0.042)
Email & Peer Encouragement (T3)	0.013	-0.035	-0.043	-0.018	-0.073	-0.176	-0.008	0.078	0.041	0.012	-0.052	-0.046
	(0.051)	(0.062)	(0.028)	(0.036)	(0.114)	(0.127)	(0.054)	(0.062)	(0.057)	(0.072)	(0.032)	(0.042)
Female × T1		0.098		-0.080		0.208		-0.263**		0.051		-0.033
		(0.109)		(0.063)		(0.238)		(0.102)		(0.122)		(0.074)
Female × T2		0.150		-0.029		0.298		-0.243*		0.112		0.037
		(0.102)		(0.058)		(0.257)		(0.123)		(0.107)		(0.065)
Female × T3		0.175		-0.093*		0.383		-0.314***		0.108		-0.023
		(0.107)		(0.053)		(0.266)		(0.118)		(0.115)		(0.060)
Female	-0.097***	-0.203**	0.048**	0.099**	-0.167*	-0.388*	0.049	0.250***	-0.083**	-0.151*	0.046**	0.051
	(0.037)	(0.078)	(0.019)	(0.043)	(0.088)	(0.202)	(0.040)	(0.092)	(0.041)	(0.082)	(0.022)	(0.048)
URM	-0.058***	-0.057	-0.026**	-0.027								
	(0.043)	(0.043)	(0.025)	(0.024)								
Observations	1023	1023	1023	1023	236	236	236	236	787	787	787	787
Control Mean	3.066	3.066	0.128	0.128	2.924	2.924	0.136	0.136	3.108	3.108	0.126	0.126
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T1 = T2$	0.335	0.585	0.148	0.128	0.348	0.555	0.731	0.826	0.504	0.763	0.095	0.077
$H_0 : T1 = T3$	0.611	0.928	0.347	0.522	0.931	0.822	0.675	0.606	0.549	0.781	0.229	0.315
$H_0 : T2 = T3$	0.672	0.659	0.535	0.298	0.411	0.423	0.945	0.799	0.984	0.998	0.522	0.326
$H_0 : T1 + F \times T1 = 0$		0.524		0.120		0.757		0.013**		0.672		0.521
$H_0 : T2 + F \times T2 = 0$		0.091*		0.085*		0.305		0.076*		0.152		0.393
$H_0 : T3 + F \times T3 = 0$		0.105		0.006***		0.374		0.017**		0.183		0.099*

Notes: This table displays OLS estimates where the dependent variables are the average grade obtained in Economics classes (columns 1, 2, 5, 6, 9, 10) and the number of Economics classes failed (columns 3, 4, 7, 8, 11, 12) in Fall 2021. Columns 1 to 4 present the estimates for the full sample. Columns 5 to 8 present the estimates for URM students. Columns 9 to 12 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade (about 6% of all classes taken by this student population) are not included in the analysis. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes and the number of non-Economics classes taken in Fall 2021. The total sample size of 1023 rather than 1098 (in Table 2) because 75 students majoring in Economics did not take any Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Treatment Effects on Econ Outcomes in Fall 2021
(Any Treatment)

	Full Sample				URM				Non-URM			
	Average grade in Econ classes		Number of Econ classes failed		Average grade in Econ classes		Number of Econ classes failed		Average grade in Econ classes		Number of Econ classes failed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: OLS Estimates												
Any T	0.011	-0.028	-0.039	-0.021	-0.045	-0.130	-0.017	0.060	0.030	0.005	-0.044	-0.043
	(0.040)	(0.048)	(0.025)	(0.031)	(0.089)	(0.097)	(0.041)	(0.044)	(0.045)	(0.055)	(0.030)	(0.038)
Female × Any T		0.142		-0.067		0.300		-0.271***		0.091		-0.007
		(0.088)		(0.049)		(0.219)		(0.100)		(0.093)		(0.056)
Female	-0.096**	-0.202***	0.048**	0.098**	-0.162*	-0.384*	0.049	0.250***	-0.083**	-0.151*	0.046**	0.051
	(0.037)	(0.078)	(0.019)	(0.043)	(0.089)	(0.200)	(0.040)	(0.092)	(0.041)	(0.081)	(0.022)	(0.048)
URM	-0.059	-0.057	-0.025	-0.026								
	(0.043)	(0.043)	(0.024)	(0.024)								
Observations	1023	1023	1023	1023	236	236	236	236	787	787	787	787
Control Mean	3.066	3.066	0.128	0.128	2.924	2.924	0.136	0.136	3.108	3.108	0.126	0.126
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$		0.118		0.021**		0.383		0.017**		0.204		0.227
Panel B: LATE Estimates												
Any T	0.031	-0.083	-0.108	-0.062	-0.109	-0.330	-0.042	0.148	0.084	0.015	-0.126	-0.134
	(0.109)	(0.143)	(0.069)	(0.094)	(0.211)	(0.246)	(0.098)	(0.109)	(0.127)	(0.172)	(0.085)	(0.120)
Female × Any T		0.342		-0.137		0.707		-0.611**		0.202		0.023
		(0.143)		(0.094)		(0.490)		(0.239)		(0.244)		(0.151)
Female	-0.098**	-0.204**	0.055***	0.097**	-0.162*	-0.385**	0.049	0.242***	-0.090**	-0.153*	0.057**	0.050
	(0.038)	(0.079)	(0.021)	(0.044)	(0.087)	(0.191)	(0.039)	(0.088)	(0.043)	(0.083)	(0.024)	(0.049)
URM	-0.060	-0.053	-0.020	-0.026								
	(0.044)	(0.044)	(0.024)	(0.024)								
Observations	1023	1023	1023	1023	236	236	236	236	787	787	787	787
Control Mean	3.066	3.066	0.128	0.128	2.924	2.924	0.136	0.136	3.108	3.108	0.126	0.126
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$		0.118		0.024**		0.367		0.027**		0.205		0.232

Notes: Panel A displays OLS estimates where the dependent variables are the average grade obtained in Economics classes (columns 1, 2, 5, 6, 9, 10) and the number of Economics classes failed (columns 3, 4, 7, 8, 11, 12) in Fall 2021. Panel B displays Local Average Treatment Effects (LATE) models, estimated via a 2SLS regression, where being "fully treated", i.e., opening all the emails, is instrumented by the initial assignment of students to treatments. Columns 1 to 4 present the estimates for the full sample. Columns 5 to 8 present the estimates for URM students. Columns 9 to 12 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade (about 6% of all classes taken by this student population) are not included in the analysis. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes and the number of non-Economics classes taken in Fall 2021. The total sample size of 1023 rather than 1098 (in Table 2) because 75 students majoring in Economics did not take any Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Treatment Effects on Non-Econ Outcomes in Fall 2021
(Any Treatment)

	Full Sample				URM				Non-URM			
	Avg grade in Non-Econ classes		# Non-Econ classes failed		Avg grade in non-Econ classes		# Non-Econ classes failed		Avg grade in non-Econ classes		# Non-Econ classes failed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: OLS Estimates												
Any T	0.112***	0.105**	-0.066*	-0.041	0.008	-0.013	0.022	0.085	0.143***	0.140**	-0.093**	-0.078
	(0.040)	(0.049)	(0.039)	(0.048)	(0.086)	(0.109)	(0.059)	(0.069)	(0.046)	(0.055)	(0.047)	(0.058)
Female × Any T		0.023		-0.089		0.070		-0.209		0.010		-0.053
		(0.085)		(0.081)		(0.181)		(0.140)		(0.097)		(0.097)
Female	0.030	0.013	0.100***	0.167**	-0.068	-0.120	0.175**	0.331***	0.049	0.041	0.072**	0.112
	(0.038)	(0.076)	(0.032)	(0.073)	(0.083)	(0.157)	(0.076)	(0.114)	(0.042)	(0.088)	(0.034)	(0.090)
URM	-0.041	-0.041	-0.071*	-0.072*								
	(0.041)	(0.041)	(0.038)	(0.038)								
Observations	1044	1044	1044	1044	243	243	243	243	801	801	801	801
Control Mean	3.260	3.260	0.229	0.229	3.266	3.266	0.250	0.250	3.239	3.239	0.155	0.155
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$		0.065*		0.045**		0.685		0.296		0.059*		0.088*
Panel B: LATE Estimates												
Any T	0.112***	0.305**	-0.066*	-0.118	0.008	-0.031	0.022	0.205	0.143***	0.426**	-0.093**	-0.238
	(0.040)	(0.142)	(0.039)	(0.138)	(0.084)	(0.260)	(0.058)	(0.162)	(0.045)	(0.169)	(0.046)	(0.175)
Female × Any T		-0.004		-0.187		0.170		-0.514		-0.080		-0.065
		(0.219)		(0.208)		(0.436)		(0.341)		(0.252)		(0.253)
Female	0.030	0.020	0.100***	0.164**	-0.068	-0.116	0.175**	0.326***	0.049	0.047	0.072**	0.109
	(0.038)	(0.077)	(0.032)	(0.074)	(0.082)	(0.150)	(0.075)	(0.108)	(0.042)	(0.090)	(0.034)	(0.092)
URM	-0.041	-0.054	-0.071*	-0.068*								
	(0.041)	(0.042)	(0.038)	(0.038)								
Observations	1044	1044	1044	1044	243	243	243	243	801	801	801	801
Control Mean	3.260	3.260	0.229	0.229	3.266	3.266	0.250	0.250	3.239	3.239	0.155	0.155
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$		0.070*		0.048**		0.677		0.287		0.062*		0.092*

Notes: Panel A displays OLS estimates where the dependent variables are the average grade obtained in Economics classes (columns 1, 2, 5, 6, 9, 10) and the number of Economics classes failed (columns 3, 4, 7, 8, 11, 12) in Fall 2021. Panel B displays Local Average Treatment Effects (LATE) models, estimated via a 2SLS regression, where being "fully treated", i.e., opening all the emails, is instrumented by the initial assignment of students to treatments. Columns 1 to 4 present the estimates for the full sample. Columns 5 to 8 present the estimates for URM students. Columns 9 to 12 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes, and the number of non-Economics classes taken in Fall 2021. The total sample size of 1044 rather than 1098 (in Table 2) because 54 students majoring in Economics only took Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Treatment Effects on Econ Outcomes *post* Fall 2021
(All Treatments)

	Full Sample			URM			Non-URM		
	Avg	# Fail	MajorF22	Avg	# Fail	MajorF22	Avg	# Fail	MajorF22
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
T1	0.013	-0.022	0.031	-0.026	-0.001	0.041	0.035	-0.031	0.028
	(0.082)	(0.050)	(0.035)	(0.192)	(0.098)	(0.065)	(0.091)	(0.058)	(0.041)
T2	-0.022	-0.061	0.011	0.028	0.009	-0.108	-0.035	-0.086	0.046
	(0.080)	(0.049)	(0.036)	(0.187)	(0.097)	(0.077)	(0.089)	(0.057)	(0.040)
T3	0.002	-0.044	0.023	0.178	-0.167*	0.091	-0.051	-0.004	0.007
	(0.082)	(0.052)	(0.035)	(0.169)	(0.085)	(0.062)	(0.093)	(0.063)	(0.042)
Female × T1	-0.048	-0.006	-0.038	0.067	-0.124	0.077	-0.085	0.029	-0.082
	(0.150)	(0.100)	(0.072)	(0.306)	(0.177)	(0.147)	(0.176)	(0.122)	(0.082)
Female × T2	0.008	0.013	0.049	0.121	-0.138	0.142	-0.030	0.061	0.022
	(0.131)	(0.086)	(0.067)	(0.287)	(0.169)	(0.157)	(0.148)	(0.100)	(0.070)
Female × T3	0.046	-0.061	-0.063	-0.044	0.115	-0.062	0.066	-0.115	-0.067
	(0.138)	(0.092)	(0.072)	(0.332)	(0.194)	(0.149)	(0.152)	(0.108)	(0.082)
Female	0.007	0.057	-0.012	0.023	0.088	-0.131	0.007	0.051	0.031
	(0.098)	(0.077)	(0.052)	(0.226)	(0.147)	(0.112)	(0.108)	(0.091)	(0.056)
URM	-0.019	-0.050	-0.006						
	(0.057)	(0.032)	(0.025)						
Observations	939	939	865	219	219	209	720	720	656
Control Mean	3.014	0.170	0.866	2.845	0.173	0.863	3.064	0.169	0.867
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T1 = T2$	0.643	0.387	0.545	0.770	0.920	0.047	0.402	0.277	0.635
$H_0 : T1 = T3$	0.881	0.647	0.808	0.223	0.050	0.342	0.323	0.639	0.595
$H_0 : T2 = T3$	0.751	0.720	0.713	0.351	0.041	0.006	0.852	0.144	0.310
$H_0 : T1 + F \times T1 = 0$	0.782	0.746	0.917	0.864	0.381	0.363	0.737	0.986	0.449
$H_0 : T2 + F \times T2 = 0$	0.891	0.503	0.294	0.508	0.365	0.803	0.585	0.767	0.241
$H_0 : T3 + F \times T3 = 0$	0.664	0.168	0.530	0.643	0.767	0.834	0.905	0.174	0.398

Notes: This table displays OLS estimates where the dependent variables are the average grade obtained in Economics classes in Spring 2022 (columns 1, 4, 7), the number of Economics classes failed in Spring 2022 (columns 2, 5, 8), and the likelihood of being an Economics major in Fall 2022, conditional on being enrolled (columns 3, 5, 9). Columns 1 to 3 present the estimates for the full sample. Columns 4 to 6 present the estimates for URM students. Columns 7 to 9 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. Controls for all specifications include Female, URM, year of study, and GPA in Fall 2021. Estimations for the Spring 2022 outcomes also include the number of Economics classes and the number of non-Economics classes taken in Spring 2022 as controls. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Treatment Effects on Econ Outcomes *post* Fall 2021
(Any Treatment)

	Full Sample			URM			Non-URM		
	Avg	# Fail	MajorF22	Avg	# Fail	MajorF22	Avg	# Fail	MajorF22
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: OLS Estimates									
Any T	-0.002	-0.042	0.022	0.052	-0.047	0.010	-0.017	-0.039	0.027
	(0.068)	(0.043)	(0.029)	(0.153)	(0.077)	(0.055)	(0.076)	(0.050)	(0.034)
Female × Any T	0.003	-0.019	-0.016	0.057	-0.063	0.051	-0.015	-0.012	-0.042
	(0.112)	(0.081)	(0.058)	(0.253)	(0.157)	(0.126)	(0.125)	(0.095)	(0.064)
Female	0.006	0.057	-0.012	0.023	0.091	-0.131	0.006	0.051	0.032
	(0.098)	(0.077)	(0.051)	(0.225)	(0.146)	(0.111)	(0.108)	(0.091)	(0.056)
URM	-0.020	-0.049	-0.005						
	(0.057)	(0.032)	(0.025)						
Observations	939	939	865	219	219	209	720	720	656
Control Mean	3.014	0.170	0.866	2.829	0.126	0.886	3.022	0.131	0.882
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$	0.995	0.377	0.917	0.590	0.420	0.591	0.748	0.530	0.783
Panel B: LATE Estimates									
Any T	-0.006	-0.120	0.060	0.125	-0.113	0.027	-0.052	-0.118	0.078
	(0.195)	(0.122)	(0.082)	(0.362)	(0.183)	(0.130)	(0.231)	(0.152)	(0.101)
Female × Any T	0.007	-0.024	-0.048	0.120	-0.134	0.131	-0.026	-0.005	-0.113
	(0.290)	(0.206)	(0.145)	(0.576)	(0.357)	(0.312)	(0.338)	(0.251)	(0.160)
Female	0.006	0.054	-0.011	0.033	0.081	-0.124	0.006	0.050	0.033
	(0.100)	(0.079)	(0.052)	(0.230)	(0.146)	(0.101)	(0.111)	(0.093)	(0.057)
URM	-0.020	-0.041	-0.008						
	(0.057)	(0.032)	(0.025)						
Observations	939	939	865	219	219	209	720	720	656
Control Mean	3.014	0.170	0.866	2.845	0.173	0.863	3.064	0.169	0.867
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$	0.995	0.381	0.919	0.584	0.417	0.584	0.749	0.533	0.780

Notes: Panel A displays OLS estimates where the dependent variables are the average grade obtained in Economics classes in Spring 2022 (columns 1, 4, 7), the number of Economics classes failed in Spring 2022 (columns 2, 5, 8), and the likelihood of being an Economics major in Fall 2022, conditional on being enrolled (columns 3, 5, 9). Panel B displays Local Average Treatment Effects (LATE) models, estimated via a 2SLS regression, where being "fully treated", i.e., opening all the emails, is instrumented by the initial assignment of students to treatments. Columns 1 to 3 present the estimates for the full sample. Columns 4 to 6 present the estimates for URM students. Columns 7 to 9 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. Controls for all specifications include Female, URM, year of study, and GPA in Fall 2021. Estimations for the Spring 2022 outcomes also include the number of Economics classes, and the number of non-Economics classes taken in Spring 2022 as controls. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Treatment Effects on Non-Econ Outcomes in Spring 2022
(Any Treatment)

	Full Sample			URM			Non-URM		
	Avg	# A or B	# Fail	Avg	# A or B	# Fail	Avg	# A or B	# Fail
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: OLS Estimates									
Any T	0.025	0.033	-0.078	0.105	0.102	-0.052	0.002	0.017	-0.087
	(0.063)	(0.084)	(0.064)	(0.156)	(0.204)	(0.147)	(0.067)	(0.091)	(0.070)
Female × Any T	0.119	0.097	-0.041	0.214	0.481	-0.278	0.089	-0.032	0.030
	(0.098)	(0.150)	(0.114)	(0.241)	(0.350)	(0.295)	(0.103)	(0.161)	(0.118)
Female	0.014	-0.005	0.065	0.015	-0.182	0.251	0.015	0.072	0.009
	(0.088)	(0.136)	(0.109)	(0.224)	(0.311)	(0.283)	(0.091)	(0.146)	(0.109)
URM	-0.038	-0.064	-0.031						
	(0.054)	(0.077)	(0.052)						
Observations	1009	1009	1009	239	239	239	770	770	770
Control Mean	3.302	3.472	0.286	3.245	3.419	0.246	3.399	3.647	0.183
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$	0.057*	0.297	0.213	0.079*	0.039**	0.196	0.249	0.913	0.547
Panel B: LATE Estimates									
Any T	0.071	0.094	-0.225	0.275	0.285	-0.149	0.006	0.053	-0.267
	(0.180)	(0.242)	(0.185)	(0.368)	(0.481)	(0.346)	(0.204)	(0.278)	(0.215)
Female × Any T	0.273	0.217	-0.059	0.490	1.120	-0.647	0.208	-0.088	0.131
	(0.257)	(0.383)	(0.293)	(0.587)	(0.852)	(0.702)	(0.275)	(0.417)	(0.308)
Female	0.017	-0.001	0.058	0.064	-0.105	0.208	0.016	0.073	0.004
	(0.090)	(0.138)	(0.110)	(0.222)	(0.308)	(0.268)	(0.092)	(0.146)	(0.109)
URM	-0.040	-0.068	-0.019						
	(0.055)	(0.078)	(0.053)						
Observations	1009	1009	1009	239	239	239	770	770	770
Control Mean	3.302	3.472	0.286	3.245	3.419	0.246	3.399	3.647	0.183
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$	0.059*	0.296	0.214	0.092*	0.046**	0.201	0.247	0.913	0.541

Notes: Panel A displays OLS estimates where the dependent variables are the average grade obtained in non-Economics classes in Spring 2022 (columns 1, 4, 7), the number of non-Economics classes with final grade of A or B in Spring 2022 (columns 2, 5, 8), and the number of non-Economics classes failed in Spring 2022 (columns 3, 6, 9). Panel B displays Local Average Treatment Effects (LATE) models, estimated via a 2SLS regression, where being "fully treated", i.e., opening all the emails, is instrumented by the initial assignment of students to treatments. Columns 1 to 3 present the estimates for the full sample. Columns 4 to 6 present the estimates for URM students. Columns 7 to 9 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, GPA in Fall 2021, and the number of Economics classes, and the number of non-Economics classes taken in Spring 2022. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 9: Balance Tests - Survey Data

	Female	URM	Hispanic	Year 1	Year 2	Year 3	Year 4	GPA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Email (T1)	-0.139*	0.012	0.022	0.041	-0.049	0.015	-0.006	0.057
	(0.072)	(0.067)	(0.064)	(0.055)	(0.053)	(0.071)	(0.072)	(0.072)
Email & Peer (T2)	-0.043	-0.022	-0.022	0.022	0.011	0.011	-0.043	0.008
	(0.073)	(0.065)	(0.061)	(0.053)	(0.057)	(0.070)	(0.070)	(0.059)
Email & Peer Encouragement (T3)	-0.089	-0.064	-0.040	-0.022	0.064	-0.039	-0.002	-0.048
	(0.071)	(0.062)	(0.059)	(0.049)	(0.058)	(0.067)	(0.069)	(0.061)
Observations	373	373	373	373	373	373	373	317
Control Mean	0.446	0.272	0.228	0.141	0.174	0.326	0.359	3.544
T1 = T2 = T3 = 0 (F p-val)	0.245	0.618	0.760	0.645	0.241	0.843	0.913	0.539
T1 = T2 (F p-val)	0.182	0.607	0.490	0.740	0.269	0.956	0.600	0.489
T1 = T3 (F p-val)	0.472	0.228	0.309	0.231	0.043	0.430	0.953	0.153
T2 = T3 (F p-val)	0.516	0.490	0.750	0.381	0.370	0.458	0.547	0.350

Notes: This table reports OLS estimates where the demographic characteristics are regressed on treatment indicator dummy variables. Column 8 reports estimated coefficients for the average GPA by Spring 2022 self-reported in the survey. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, hence the lower number of observations in column 8. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

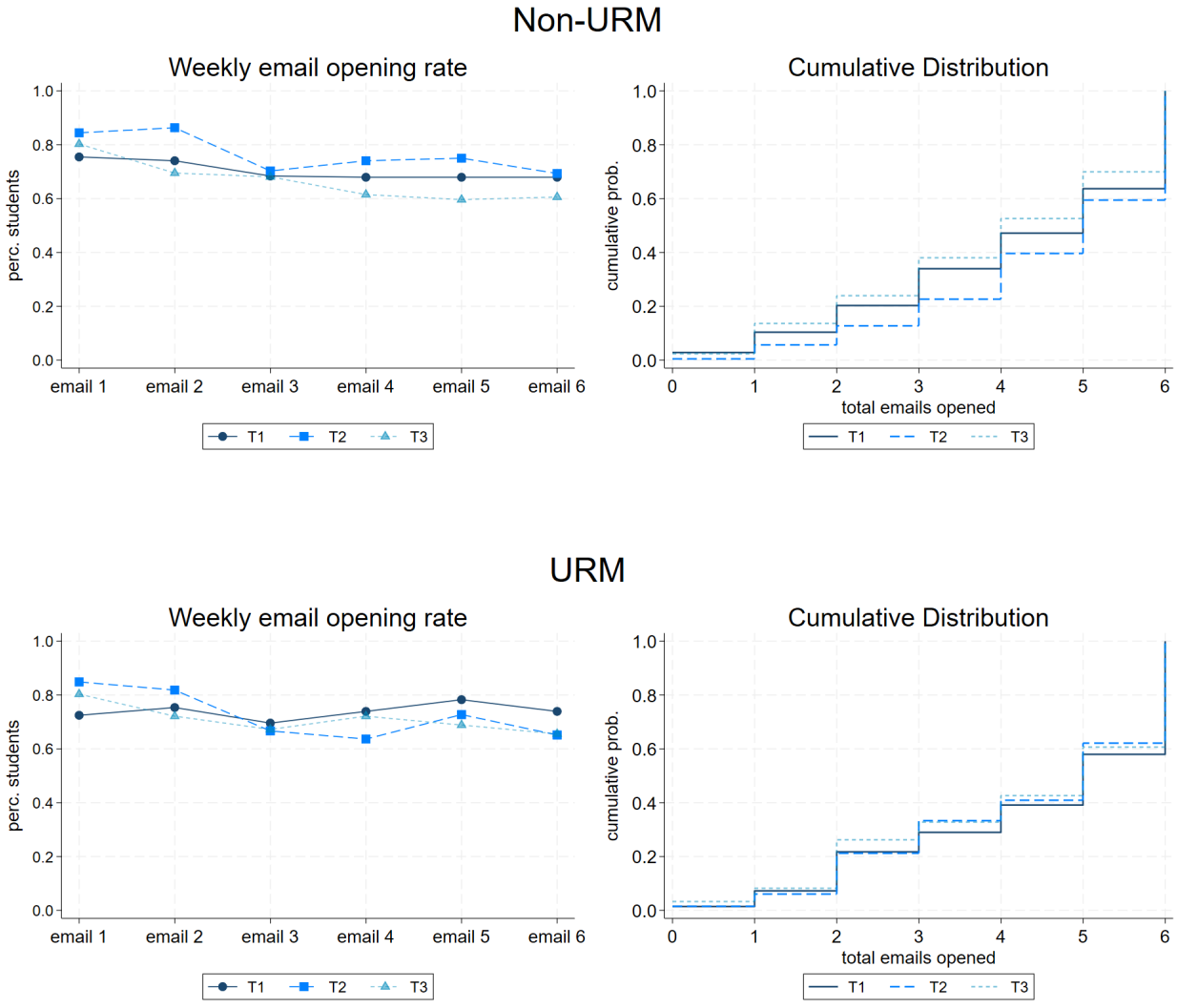
Table 10: Treatment Effects on Survey Outcomes
(All Treatments)

	Aggregated Well-being	Sense of Belonging	Growth Mindset	Self-Efficacy	Emotional Well-being	Change major?
	(1)	(2)	(3)	(4)	(5)	(6)
T1	0.074	0.026	0.091	0.152*	0.030	-0.013
	(0.056)	(0.085)	(0.073)	(0.083)	(0.112)	(0.039)
T2	0.021	0.052	-0.013	-0.004	0.049	-0.036
	(0.059)	(0.082)	(0.075)	(0.100)	(0.106)	(0.037)
T3	0.032	0.027	0.135**	0.010	-0.043	-0.013
	(0.055)	(0.080)	(0.068)	(0.087)	(0.105)	(0.037)
Female	-0.088**	-0.079	0.147***	-0.043	-0.379***	-0.031
	(0.042)	(0.061)	(0.051)	(0.068)	(0.079)	(0.027)
URM	0.032	0.036	0.074	0.091	-0.073	0.022
	(0.050)	(0.066)	(0.057)	(0.077)	(0.096)	(0.033)
GPA	0.213***	0.185***	0.224***	0.326***	0.115	-0.014
	(0.048)	(0.067)	(0.064)	(0.088)	(0.095)	(0.039)
Observations	373	373	373	373	373	373
Control Mean	-0.000	-0.000	0.000	-0.000	0.000	0.098
Controls	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T1 = T2$	0.363	0.749	0.149	0.106	0.857	0.538
$H_0 : T1 = T3$	0.445	0.992	0.494	0.091	0.500	0.987
$H_0 : T2 = T3$	0.852	0.748	0.024	0.891	0.360	0.508

Notes: This table reports OLS estimates where the dependent variables are the aggregated well-being index, sense of belonging index, growth mindset index, self-efficacy index, emotional well-being index, and the likelihood of having moderate, high, or very high chances of changing majors. The indexes are calculated as weighted averages of the underlying variables, where the weights are inversely related to the degree of correlation between the underlying variables (see Anderson (2008)). All indexes are standardized around their Control mean. Therefore, estimates are expressed in standard deviations from the control mean. Controls for all specifications include Female, URM, year of study, and self-reported GPA. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, and therefore have missing GPA values. We input the missing values with the mean GPA observed in the full sample, and we include a dummy variable equal to 1 for the survey respondents who have inputted GPA values, and 0 otherwise. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

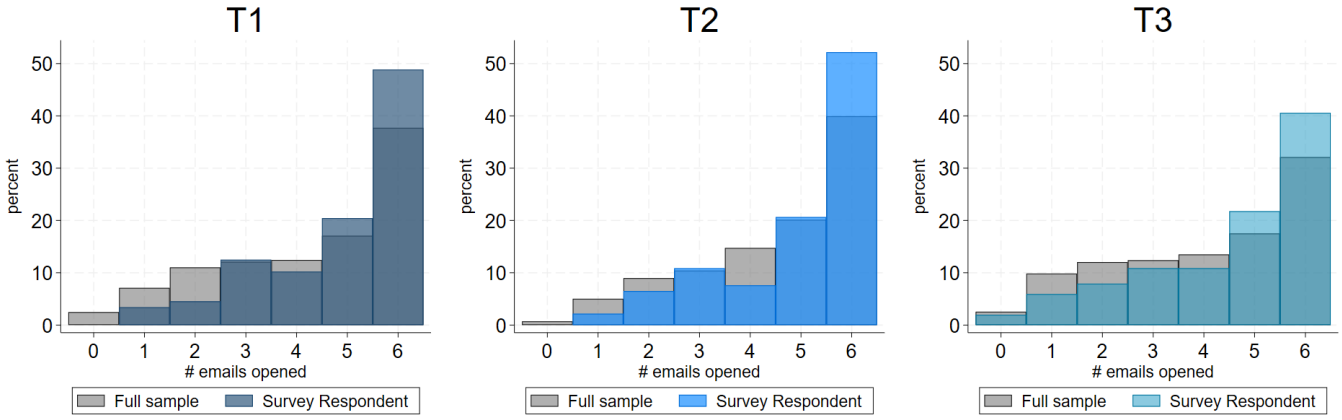
A Appendix Figures and Tables

Figure A.1: Percentage of students opening weekly email.
By URM status



Notes: The top panel shows the percentages of non-URM students who opened each email and the cumulative distributions of the total number of emails opened by URM students in each treatment. The bottom panel reports the same information for URM students. T1 refers to the *Email* treatment; T2 refers to the *Email & Peer* treatment, and T3 refers to the *Email & Peer Encouragement* treatment. For non-URM students, Kolmogrov-Smirnov test of equality of distributions generate the following p-values: for T1 vs T2, p-value of 0.132; for T1 vs T3, p-value of 0.765; for T2 vs T3, p-value of 0.010. For URM students, Kolmogrov-Smirnov test of equality of distributions generate the following p-values: for T1 vs T2, p-value of 1.000; for T1 vs T3, p-value of 1.000; for T2 vs T3, p-value = 1.000.

Figure A.2: Number of emails opened
Full sample vs. survey respondents



Notes: The figure shows the distribution of the total number of emails opened by students in each of the three treatments, comparing the full sample to the subsample who participated in the survey. T1 refers to the *Email* treatment; T2 refers to the *Email & Peer* treatment, and T3 refers to the *Email & Peer Encouragement* treatment.

Table A.1: Pre-registered Survey-Generated Outcomes

Index	Survey Questions
Sense of Belonging	1) I feel that the department of economics values students like me 2) I sometimes doubt that economics is the right major for me 3) I feel different from the typical economics student 4) Do you have close friends on campus among fellow economics students? 5) I felt comfortable asking questions in my econ classes 6) I felt that the students in the econ classes supported one another 7) I found it hard to connect with professors in my econ classes
Growth Mindset	1) My experience in Fall 2021 made me more confident in my abilities and my potential 2) If I do poorly in an economics assignment or exam, I start questioning my ability to major in economics. 3) If you encountered difficulties in an economics course in Fall 2021, and studying harder did not improve your performance, what strategy did you take? 4) If you encounter difficulties in an economics course in Spring 2022, what strategy do you think you will most likely take to improve your grade?
Self-Efficacy	1) How confident are you that you will graduate from Texas A&M with a 4-year degree? 2) How confident are you that you will be able to get your ideal job in the next 5 years? 3) Do you think you can be successful studying and later working in the field of economics? 4) Last semester, I believed that I could learn the material and succeed in my econ classes 5) How confident are you that you can learn the material presented in your current economics classes?
Emotional Well-being	1) How much of the time during the past two months have you been a happy person? 2) How much of the time during the past two months have you been a very nervous person? 3) How much of the time during the past two months have you felt so down in the dumps that nothing could cheer you up? 4) How much of the time during the past two months have you felt calm and peaceful? 5) How much of the time during the past two months have you felt downhearted and blue?
Intention to Change Major	1) What are the chances that you will change majors before graduation?

Notes: The questions entering each index are codes as follows. **Sense of belonging:** Questions 1, 2, 3, 5, 6, and 7 are coded on a scale from 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." Question 4 is coded on a scale from 1 to 3, where 1 indicates "no" and 3 indicates "yes, many." Questions 2, 3, and 7 are rescaled so that higher values indicate more positive feelings. **Growth Mindset:** Questions 1 and 2 are coded on a scale from 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." Questions 3 and 4 are coded as binary variables with the value of 0 if the student responded "drop the class" or "I kept studying on my own," and 1 otherwise. **Self-Efficacy:** Questions 1, 2, and 5 are coded on a scale from 1 to 5, with 1 indicating "not at all" and 5 indicating "extremely confident." Question 3 is coded on a scale from 1 to 5, with 1 indicating "no" and 5 indicating "yes, to a great extent." Question 4 is coded on a scale from 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." **Emotional well-being:** The five questions are coded on a scale from 1 to 4, with 1 indicating "all of the time" and 4 indicating "none of the time." Questions 1 and 4 are rescaled so that higher values indicate more positive feelings. **Intention to change major:** The question is coded as a binary variable with the value of 0 if the student responded "small" or "very small", and 1 if the student responded "moderate", "high", or "very high."

Table A.2: What determines email opening

	Email 1	Email 2	Email 3	Email 4	Email 5	Email 6	Open All
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
T2	0.098***	0.108***	0.006	0.021	0.039	-0.012	0.021
	(0.034)	(0.033)	(0.039)	(0.038)	(0.038)	(0.039)	(0.041)
T3	0.055	-0.043	-0.009	-0.055	-0.087**	-0.078*	-0.055
	(0.035)	(0.038)	(0.039)	(0.040)	(0.040)	(0.040)	(0.040)
Female	0.057*	0.108***	0.108***	0.085**	0.093***	0.088**	0.092**
	(0.030)	(0.030)	(0.034)	(0.035)	(0.034)	(0.035)	(0.038)
URM	-0.007	-0.001	-0.015	0.017	0.054	0.017	0.036
	(0.033)	(0.035)	(0.038)	(0.038)	(0.037)	(0.038)	(0.040)
Year 2	-0.097**	-0.085*	-0.043	-0.050	-0.023	-0.069	-0.010
	(0.042)	(0.045)	(0.049)	(0.050)	(0.049)	(0.049)	(0.052)
Year 3	-0.040	-0.009	-0.026	0.037	-0.012	-0.016	0.028
	(0.039)	(0.041)	(0.047)	(0.047)	(0.047)	(0.047)	(0.050)
Year 4	-0.031	-0.020	-0.063	-0.028	-0.045	-0.089*	-0.036
	(0.039)	(0.042)	(0.047)	(0.048)	(0.047)	(0.048)	(0.049)
Observations	833	833	833	833	833	833	833
T1 Mean	0.747	0.744	0.687	0.694	0.705	0.694	0.377
$H_0 : T2 = T3$	0.195	0.000	0.706	0.057	0.001	0.106	0.063

Notes: This table reports OLS estimates where the dependent variables are indicator variables equal to 1 if the student opened the corresponding weekly email. Column 7 reports the estimates of an indicator variable equal to 1 if the student opened all the emails. The excluded variable is an indicator equal to 1 if the student was assigned to T1. The sample size is 833 since we do not include students assigned to the Control. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.3: Treatment Effects of getting A or B in Fall 2021
(All Treatments)

	Full Sample				URM				Non-URM			
	Number of Econ classes with A or B		Likelihood to get $\geq$ 1 A or B in Econ		Number of Econ classes with A or B		Likelihood to get $\geq$ 1 A or B in Econ		Number of Econ classes with A or B		Likelihood to get $\geq$ 1 A or B in Econ	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
T1	-0.059	-0.069	-0.015	-0.033	-0.029	-0.016	-0.026	-0.006	-0.071	-0.089	-0.011	-0.035
	(0.049)	(0.062)	(0.025)	(0.030)	(0.103)	(0.132)	(0.057)	(0.069)	(0.056)	(0.070)	(0.028)	(0.033)
T2	-0.037	-0.064	-0.016	-0.031	-0.059	-0.068	-0.071	-0.062	-0.031	-0.070	0.007	-0.015
	(0.049)	(0.062)	(0.025)	(0.030)	(0.118)	(0.156)	(0.060)	(0.073)	(0.053)	(0.066)	(0.026)	(0.032)
T3	-0.018	-0.002	-0.035	-0.051	-0.024	-0.031	-0.074	-0.087	-0.014	0.008	-0.012	-0.028
	(0.047)	(0.056)	(0.025)	(0.030)	(0.114)	(0.138)	(0.061)	(0.071)	(0.050)	(0.060)	(0.027)	(0.033)
Female × T1		0.035		0.067		-0.059		-0.082		0.065		0.089
		(0.098)		(0.055)		(0.194)		(0.128)		(0.112)		(0.060)
Female × T2		0.100		0.056		0.031		-0.028		0.139		0.083
		(0.094)		(0.051)		(0.217)		(0.125)		(0.103)		(0.055)
Female × T3		-0.061		0.058		0.034		0.061		-0.080		0.059
		(0.102)		(0.053)		(0.255)		(0.145)		(0.108)		(0.055)
Female	-0.086**	-0.104	-0.032*	-0.078**	-0.084	-0.086	-0.047	-0.035	-0.095**	-0.125*	-0.031	-0.088**
	(0.036)	(0.068)	(0.020)	(0.036)	(0.084)	(0.146)	(0.049)	(0.086)	(0.039)	(0.075)	(0.021)	(0.038)
URM	-0.042**	-0.043	-0.056*	-0.055**								
	(0.043)	(0.043)	(0.024)	(0.024)								
Observations	1023	1023	1023	1023	236	236	236	236	787	787	787	787
Control Mean	1.537	1.537	0.852	0.852	1.492	1.492	0.814	0.814	1.551	1.551	0.864	0.864
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T1 = T2$	0.654	0.948	0.975	0.953	0.773	0.694	0.466	0.454	0.496	0.796	0.531	0.573
$H_0 : T1 = T3$	0.400	0.255	0.452	0.579	0.955	0.893	0.450	0.262	0.306	0.155	0.951	0.858
$H_0 : T2 = T3$	0.706	0.291	0.464	0.545	0.753	0.787	0.960	0.742	0.743	0.233	0.481	0.707
$H_0 : T1 + F \times T1 = 0$		0.653		0.461		0.600		0.409		0.787		0.287
$H_0 : T2 + F \times T2 = 0$		0.614		0.546		0.806		0.371		0.388		0.126
$H_0 : T3 + F \times T3 = 0$		0.454		0.868		0.990		0.838		0.420		0.490

Notes: This table displays OLS estimates where the dependent variables are the number of Economics classes with grade A or B (columns 1, 2, 5, 6, 9, 10) and the likelihood of getting at least one A or B in Economics classes (columns 3, 4, 7, 8, 11, 12). Columns 1 to 4 present the estimates for the full sample. Columns 5 to 8 present the estimates for URM students. Columns 9 to 12 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade (about 6% of all classes taken by this student population) are not included in the analysis. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes, and the number of non-Economics classes taken in Fall 2021. The total sample size of 1023 rather than 1098 (in Table 2) because 75 students majoring in Economics did not take any Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Treatment Effects on Non-Econ Classes in Fall 2021 (All Treatments)

	Full Sample		URM		Non-URM	
	Avg	# Fail	Avg	# Fail	Avg	# Fail
	(1)	(2)	(3)	(4)	(5)	(6)
T1	0.132**	-0.049	0.068	0.013	0.148**	-0.063
	(0.059)	(0.057)	(0.123)	(0.093)	(0.069)	(0.069)
T2	0.065	-0.048	-0.048	0.142	0.096	-0.105
	(0.059)	(0.057)	(0.135)	(0.095)	(0.066)	(0.068)
T3	0.118**	-0.026	-0.067	0.105	0.176***	-0.067
	(0.056)	(0.056)	(0.122)	(0.092)	(0.064)	(0.066)
Female × T1	-0.022	-0.059	-0.098	-0.094	-0.005	-0.049
	(0.109)	(0.094)	(0.242)	(0.166)	(0.121)	(0.113)
Female × T2	0.040	-0.072	0.075	-0.287	0.041	-0.007
	(0.100)	(0.092)	(0.207)	(0.179)	(0.114)	(0.107)
Female × T3	0.054	-0.138	0.260	-0.247	-0.005	-0.104
	(0.101)	(0.095)	(0.224)	(0.214)	(0.114)	(0.106)
Female	0.013	0.167**	-0.122	0.331***	0.042	0.112
	(0.076)	(0.073)	(0.158)	(0.115)	(0.089)	(0.090)
URM	-0.040	-0.072*				
	(0.041)	(0.038)				
Observations	1044	1044	243	243	801	801
Control Mean	3.260	0.229	3.239	0.155	3.266	0.250
Controls	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T1 = T2$	0.236	0.986	0.323	0.238	0.433	0.503
$H_0 : T1 = T3$	0.795	0.660	0.192	0.395	0.649	0.945
$H_0 : T2 = T3$	0.314	0.666	0.863	0.739	0.189	0.529
$H_0 : T1 + F \times T1 = 0$	0.227	0.146	0.882	0.559	0.154	0.208
$H_0 : T2 + F \times T2 = 0$	0.192	0.098*	0.861	0.336	0.139	0.179
$H_0 : T3 + F \times T3 = 0$	0.040**	0.032**	0.312	0.442	0.067*	0.036**

Notes: This table displays OLS estimates where the dependent variables are the average grade obtained in Economics classes (columns 1, 3, 5) and the number of Economics classes failed (columns 2, 4, 6) in Fall 2021. Columns 1 and 2 present the estimates for the full sample. Columns 3 and 4 present the estimates for URM students. Columns 5 and 6 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes, and the number of non-Economics classes taken in Fall 2021. The total sample size of 1044 rather than 1098 (in Table 2) because 54 students majoring in Economics did not take any non-Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.5: Treatment Effects by GPA in Fall 2021
(All Treatments)

	Above-Median GPA (> 3.375)				Below Median GPA (< 3.375)					
	Average grade in Econ classes		Number of Econ classes with A or B		Average grade in Econ classes		Number of Econ classes with A or B		Number of Econ classes failed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
T1	-0.007	0.031	-0.055	-0.060	0.008	-0.082	-0.061	-0.087	-0.034	-0.004
	(0.049)	(0.061)	(0.037)	(0.048)	(0.089)	(0.098)	(0.088)	(0.100)	(0.061)	(0.069)
T2	0.074	0.084	0.002	-0.031	0.014	-0.062	-0.103	-0.124	-0.084	-0.048
	(0.051)	(0.072)	(0.039)	(0.058)	(0.081)	(0.086)	(0.084)	(0.094)	(0.052)	(0.056)
T3	0.022	0.005	-0.010	0.024	0.031	-0.046	-0.065	-0.091	-0.075	-0.023
	(0.048)	(0.062)	(0.036)	(0.044)	(0.094)	(0.105)	(0.087)	(0.095)	(0.056)	(0.064)
Female × T1		-0.106		0.016		0.504**		0.147		-0.174
		(0.104)		(0.076)		(0.227)		(0.209)		(0.148)
Female × T2		-0.025		0.080		0.448*		0.125		-0.213
		(0.098)		(0.073)		(0.231)		(0.215)		(0.145)
Female × T3		0.054		-0.106		0.432*		0.145		-0.281**
		(0.098)		(0.080)		(0.226)		(0.242)		(0.127)
Female	-0.026	-0.044	-0.028	-0.031	-0.216***	-0.566***	-0.256	-0.150*	0.252**	0.082*
	(0.037)	(0.065)	(0.029)	(0.049)	(0.076)	(0.181)	(0.077)	(0.158)	(0.048)	(0.108)
Observations	519	519	519	519	504	504	504	504	504	504
Control Mean	3.602	3.602	1.824	1.824	2.508	2.508	1.238	1.238	0.262	0.262
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T1 = T2$	0.128	0.441	0.164	0.602	0.937	0.829	0.632	0.712	0.354	0.463
$H_0 : T1 = T3$	0.568	0.650	0.234	0.040	0.803	0.742	0.969	0.971	0.454	0.759
$H_0 : T2 = T3$	0.309	0.255	0.763	0.302	0.848	0.874	0.656	0.727	0.856	0.662
$H_0 : T1 + F \times T1 = 0$		0.366		0.456		0.039**		0.743		0.176
$H_0 : T2 + F \times T2 = 0$		0.383		0.245		0.074*		0.997		0.053*
$H_0 : T3 + F \times T3 = 0$		0.437		0.215		0.055*		0.806		0.006***

Notes: This table displays OLS estimates where the dependent variables are the average grade obtained in Economics classes (columns 1, 2, 5, 6), the number of Economics classes with grade A or B (columns 3, 4, 7, 8), and the number of Economics classes failed (columns 9, 10) in Fall 2021. Columns 1 to 4 present the estimates for above-median GPA students. Columns 5 to 10 present the estimates for below-median GPA students. Students with above-median GPA did not fail classes. Classes with a pass/fail grade instead of a numerical grade (about 6% of all classes taken by this student population) are not included in the analysis. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes, and the number of non-Economics classes taken in Fall 2021. The total sample size adds to 1023 rather than 1098 (in Table 2) because 75 students majoring in Economics did not take any Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.6: Treatment Effects by GPA in Fall 2021
(Any Treatment)

	Above-Median GPA (> 3.375)				Below Median GPA (< 3.375)					
	Average grade in Econ classes		Number of Econ classes with A or B		Average grade in Econ classes		Number of Econ classes with A or B		Number of Econ classes failed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Any T	0.029	0.036	-0.021	-0.020	0.017	-0.063	-0.077	-0.102	-0.064	-0.026
	(0.039)	(0.053)	(0.029)	(0.041)	(0.072)	(0.077)	(0.070)	(0.077)	(0.047)	(0.052)
Female × Any T		-0.020		-0.002		0.462**		0.141		-0.222*
		(0.078)		(0.059)		(0.197)		(0.183)		(0.119)
Female	-0.041	-0.026	-0.030	-0.028	-0.215***	-0.566***	-0.149*	-0.256	0.083*	0.252**
	(0.036)	(0.065)	(0.028)	(0.049)	(0.076)	(0.181)	(0.077)	(0.158)	(0.048)	(0.108)
Observations	519	519	519	519	504	504	504	504	504	504
Control Mean	3.602	3.602	1.824	1.824	2.508	2.508	1.238	1.238	0.262	0.262
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$		0.777		0.587		0.029**		0.809		0.021**

Notes: This table displays OLS estimates where the dependent variables are the average grade obtained in Economics classes (columns 1, 2, 5, 6), the number of Economics classes with grade A or B (columns 3, 4, 7, 8), and the number of Economics classes failed (columns 9, 10) in Fall 2021. Columns 1 to 4 present the estimates for above-median GPA students. Columns 5 to 10 present the estimates for below-median GPA students. Students with above-median GPA did not fail classes. Classes with a pass/fail grade instead of a numerical grade (about 6% of all classes taken by this student population) are not included in the analysis. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes, and the number of non-Economics classes taken in Fall 2021. The total sample size adds to 1023 rather than 1098 (in Table 2) because 75 students majoring in Economics did not take any Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.7: Treatment Effects by cohort in Fall 2021
(Any Treatment)

	Underclass (years 1-2)						Upperclass (years 3-4)					
	Average grade in Econ classes		Number of Econ classes with A or B		Number of Econ classes failed		Average grade in Econ classes		Number of Econ classes with A or B		Number of Econ classes failed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Any T	0.063	0.028	-0.065	-0.051	-0.068	-0.074	-0.017	-0.058	-0.015	-0.038	-0.020	0.013
	(0.055)	(0.068)	(0.049)	(0.065)	(0.034)	(0.046)	(0.057)	(0.066)	(0.056)	(0.067)	(0.035)	(0.042)
Female × Any T		0.109		-0.042		0.019		0.170		0.094		-0.135*
		(0.112)		(0.095)		(0.064)		(0.129)		(0.118)		(0.072)
Female	-0.098*	-0.178*	-0.102**	-0.071	0.075***	0.061	-0.103*	-0.232**	-0.089*	-0.161	0.032	0.135**
	(0.051)	(0.097)	(0.048)	(0.076)	(0.028)	(0.055)	(0.053)	(0.117)	(0.049)	(0.103)	(0.027)	(0.065)
Observations	422	422	422	422	422	422	601	601	601	601	601	601
Control Mean	3.002	3.002	1.189	1.189	0.123	0.123	3.111	3.111	1.781	1.781	0.132	0.132
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$		0.131		0.175		0.226		0.315		0.557		0.041**

Notes: This table displays OLS estimates where the dependent variables are the average grade obtained in Economics classes (columns 1, 2, 7, 8), the number of Economics classes with grade A or B (columns 3, 4, 9, 10), and the number of Economics classes failed (columns 5, 6, 11, 12) in Fall 2021. Columns 1 to 6 present the estimates for underclass students (years 1 and 2). Columns 7 to 12 present the estimates for upperclass students (years 3 and 4). Classes with a pass/fail grade instead of a numerical grade (about 6% of all classes taken by this student population) are not included in the analysis. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls include Female, URM, year of study, GPA in Fall 2021, the number of Economics classes, and the number of non-Economics classes taken in Fall 2021. The total sample size adds to 1023 rather than 1098 (in Table 2) because 75 students majoring in Economics did not take any Economics classes during Fall 2021. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.8: Treatment Effects on Number of Classes *post* Fall 2021
(Any Treatment)

	Full Sample				URM				Non-URM			
	Total	# Econ	$\geq$ 1 Econ	# NonEc	Total	# Econ	$\geq$ 1 Econ	# NonEc	Total	# Econ	$\geq$ 1 Econ	# NonEc
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Any T	0.108	0.070	0.036	0.035	0.106	0.287	0.083	-0.182	0.111	0.009	0.022	0.099
	(0.081)	(0.079)	(0.026)	(0.085)	(0.182)	(0.174)	(0.057)	(0.198)	(0.091)	(0.088)	(0.029)	(0.092)
Female × Any T	-0.196	-0.132	-0.045	-0.066	-0.226	-0.535**	-0.059	0.299	-0.189	-0.012	-0.043	-0.175
	(0.145)	(0.139)	(0.049)	(0.161)	(0.307)	(0.246)	(0.103)	(0.314)	(0.165)	(0.163)	(0.056)	(0.187)
Female	0.156	0.032	0.022	0.117	0.358	0.355*	0.043	-0.005	0.097	-0.063	0.021	0.155
	(0.125)	(0.120)	(0.043)	(0.137)	(0.266)	(0.207)	(0.087)	(0.256)	(0.142)	(0.141)	(0.048)	(0.160)
URM	0.043	0.006	0.002	0.036								
	(0.072)	(0.064)	(0.022)	(0.078)								
Observations	1064	1064	1064	1064	250	250	250	250	814	814	814	814
Control Mean	4.287	1.728	0.868	2.558	4.372	1.723	0.888	2.649	4.344	1.745	0.887	2.599
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$	0.461	0.582	0.837	0.822	0.627	0.154	0.778	0.636	0.570	0.981	0.664	0.640

Notes: This table displays OLS estimates where the dependent variables are the total number of classes taken (columns 1, 5, 9), the total number of Economics classes taken (columns 2, 6, 10), the likelihood of taking at least one Economics class (columns 3, 7, 11), and the number of non-Economics classes taken (columns 4, 8, 12) in Spring 2022. The analysis is restricted to the sample of students who are enrolled in Spring 2022. Columns 1 to 4 present the estimates for the full sample. Columns 5 to 8 present the estimates for URM students. Columns 9 to 12 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, and GPA in Fall 2021. Estimations for the total number of classes taken in Spring 2022 include the total number of classes taken in Fall 2021 as a control. Estimations for the number of Economics classes taken and the likelihood of taking at least one Economics class in Spring 2022 include the number of Economics classes taken in Fall 2021 as a control. Estimations for the number of non-Economics classes taken in Spring 2022 include the number of non-Economics classes taken in Fall 2021 as a control. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.9: Treatment Effects on Non-Econ Outcomes in Spring 2022
(All Treatments)

	Full Sample			URM			Non-URM		
	Avg	# A or B	# Fail	Avg	# A or B	# Fail	Avg	# A or B	# Fail
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
T1	-0.012	0.072	-0.023	0.073	0.130	-0.024	-0.036	0.054	-0.021
	(0.081)	(0.100)	(0.077)	(0.089)	(0.110)	(0.088)	(0.193)	(0.240)	(0.170)
T2	-0.017	-0.020	-0.118	0.012	0.093	0.048	-0.024	-0.049	-0.169**
	(0.073)	(0.106)	(0.073)	(0.077)	(0.115)	(0.076)	(0.184)	(0.251)	(0.189)
T3	0.102	0.047	-0.097	0.239	0.101	-0.197	0.055	0.036	-0.065
	(0.070)	(0.100)	(0.072)	(0.076)	(0.109)	(0.082)	(0.173)	(0.243)	(0.159)
Female × T1	0.138	-0.081	-0.066	0.257	0.276	-0.347	0.098	-0.199	0.027
	(0.125)	(0.186)	(0.140)	(0.284)	(0.422)	(0.311)	(0.139)	(0.206)	(0.158)
Female × T2	0.159	0.169	0.006	0.292	0.598	-0.393	0.104	0.006	0.139
	(0.112)	(0.176)	(0.123)	(0.263)	(0.405)	(0.315)	(0.120)	(0.189)	(0.125)
Female × T3	0.065	0.212	-0.072	0.031	0.536	-0.026	0.075	0.104	-0.084
	(0.109)	(0.176)	(0.124)	(0.280)	(0.450)	(0.339)	(0.115)	(0.188)	(0.127)
Female	0.010	-0.016	0.076	0.042	-0.159	0.226	0.009	0.058	0.024
	(0.088)	(0.136)	(0.108)	(0.222)	(0.309)	(0.282)	(0.091)	(0.146)	(0.110)
URM	-0.042	-0.078	-0.019						
	(0.053)	(0.076)	(0.051)						
Observations	1009	1009	1009	239	239	239	770	770	770
Control Mean	3.302	3.472	0.286	3.089	3.117	0.367	3.369	3.583	0.260
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T1 = T2$	0.940	0.361	0.152	0.731	0.873	0.666	0.891	0.353	0.039
$H_0 : T1 = T3$	0.120	0.800	0.264	0.295	0.895	0.160	0.269	0.867	0.584
$H_0 : T2 = T3$	0.063	0.504	0.726	0.157	0.973	0.137	0.251	0.446	0.109
$H_0 : T1 + F \times T1 = 0$	0.183	0.954	0.448	0.105	0.235	0.141	0.560	0.407	0.965
$H_0 : T2 + F \times T2 = 0$	0.096*	0.292	0.258	0.118	0.032**	0.187	0.388	0.778	0.766
$H_0 : T3 + F \times T3 = 0$	0.046**	0.074*	0.098*	0.221	0.095*	0.470	0.129	0.358	0.127

Notes: This table displays OLS estimates where the dependent variables are the average grade in non-Economics classes (columns 1, 4, 7), the number of non-Economics classes with a final grade of A or B (columns 2, 5, 8), and the number of non-Economics classes failed (columns 3, 6, 9) in Spring 2022. The analysis is restricted to the sample of students who are enrolled in Spring 2022. Columns 1 to 3 present the estimates for the full sample. Columns 4 to 6 present the estimates for URM students. Columns 7 to 9 present the estimates for non-URM students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. Controls for all specifications include Female, URM, year of study, GPA in Fall 2021, and the number of non-Econ classes taken in Spring 2022. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.10: Treatment Effects on Non-Econ Outcomes in S2022 by GPA (Any Treatment)

	Above-Median GPA			Below-Median GPA		
	Avg	# A or B	# Fail	Avg	# A or B	# Fail
	(1)	(2)	(3)	(4)	(5)	(6)
Any T	-0.048	-0.015	0.015	0.069	0.060	-0.155
	(0.055)	(0.079)	(0.028)	(0.103)	(0.136)	(0.111)
Female × Any T	0.043	-0.046	0.008	0.399*	0.471	-0.218
	(0.079)	(0.106)	(0.036)	(0.216)	(0.347)	(0.296)
Female	0.030	0.111	-0.029	-0.187	-0.341	0.290
	(0.067)	(0.083)	(0.022)	(0.200)	(0.318)	(0.282)
Observations	511	511	511	498	498	498
Control Mean	3.686	4.235	0.044	3.031	2.936	0.356
Controls	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + F \times T = 0$	0.942	0.382	0.329	0.013**	0.098*	0.173

Notes: This table displays OLS estimates where the dependent variables are the average grade in non-Economics classes (columns 1, 4), the number of non-Economics classes with a final grade of A or B (columns 2, 5), and the number of non-Economics classes failed (columns 3, 6) in Spring 2022. The analysis is restricted to the sample of students who are enrolled in Spring 2022. Columns 1 to 3 present the estimates for above-median GPA students. Columns 4 to 6 present the estimates for below-median GPA students. Classes with a pass/fail grade instead of a numerical grade are not included in the analysis. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, GPA in Fall 2021, and the number of non-Econ classes taken in Spring 2022. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.11: Selection into the survey

	Survey Respondent	Survey Respondent	Survey Respondent	Survey Respondent
	(1)	(2)	(3)	(4)
Email (T1)	-0.021	-0.022	0.043	-0.022
	(0.040)	(0.039)	(0.044)	(0.045)
Email & Peer (T2)	-0.004	-0.006	0.021	0.007
	(0.040)	(0.039)	(0.044)	(0.045)
Email & Peer Encouragement (T3)	0.034	0.034	0.071	0.056
	(0.041)	(0.040)	(0.045)	(0.046)
Female		0.179***	0.300***	0.179***
		(0.033)	(0.065)	(0.033)
URM		0.032	0.031	0.070
		(0.033)	(0.033)	(0.066)
T1 × Female			-0.242***	
			(0.091)	
T2 × Female			-0.102	
			(0.092)	
T3 × Female			-0.138	
			(0.094)	
T1 × URM				-0.003
				(0.093)
T2 × URM				-0.056
				(0.093)
T3 × URM				-0.096
				(0.094)
Constant	0.335***	0.279***	0.247***	0.270***
	(0.029)	(0.029)	(0.032)	(0.032)
Observations	1108	1108	1108	1108
$H_0 : T1 = T2$	0.654	0.680	0.629	0.518
$H_0 : T1 = T3$	0.169	0.161	0.545	0.091
$H_0 : T2 = T3$	0.354	0.318	0.279	0.290
$H_0 : T1 + F \times T1 = 0$			0.013**	
$H_0 : T2 + F \times T2 = 0$			0.320	
$H_0 : T3 + F \times T3 = 0$			0.419	
$H_0 : T1 + U \times T1 = 0$				0.762
$H_0 : T2 + U \times T2 = 0$				0.549
$H_0 : T3 + U \times T3 = 0$				0.627

Notes: This table displays OLS estimates where the dependent variable is an indicator equal to 1 if the student participated in the online survey, and 0 if he/she did not. All specifications control for year of study. The sample size is 1108 instead of 1098 (in Table 2) because the initial sample of economics major that we obtained at the beginning of the FAll 2021 semester had 1108 students. However, 10 of these students withdrew during the Fall 2021 semester, leading to a working sample of 1098, which we employ for our primary analysis. Since transcript data are de-identified, we do not know which of the 1108 initial students withdrew. All of the 1108 students were invited to participate in the survey.

Table A.12: Treatment Effects on Survey Outcomes
(Any Treatment)

	Aggregated Well-being		Sense of Belonging		Growth Mindset		Self-Efficacy		Emotional Well-being		Change major?	
	All	Female	All	Female	All	Female	All	Female	All	Female	All	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: OLS Estimates												
Any T	0.003	-0.087	-0.012	-0.161	0.029	-0.050	0.072	0.164	-0.078	-0.303	0.007	-0.053
	(0.051)	(0.089)	(0.079)	(0.130)	(0.071)	(0.122)	(0.084)	(0.147)	(0.102)	(0.194)	(0.034)	(0.058)
URM × Any T	0.147	0.373**	0.178	0.276	0.163	0.485**	-0.084	-0.132	0.330	0.861**	-0.102	-0.040
	(0.109)	(0.146)	(0.152)	(0.220)	(0.138)	(0.201)	(0.167)	(0.243)	(0.213)	(0.334)	(0.078)	(0.120)
URM	-0.074	-0.199	-0.096	-0.181	-0.049	-0.267	0.161	0.347	-0.312*	-0.693**	0.098	0.025
	(0.091)	(0.128)	(0.131)	(0.179)	(0.122)	(0.183)	(0.141)	(0.214)	(0.176)	(0.295)	(0.069)	(0.110)
Female	-0.091**		-0.077		0.144***		-0.052		-0.378***		-0.033	
	(0.042)		(0.061)		(0.051)		(0.069)		(0.079)		(0.027)	
Observations	373	141	373	141	373	141	373	141	373	141	373	141
Control Mean	-0.000	-0.037	-0.000	0.046	0.000	0.058	-0.000	-0.065	0.000	-0.186	0.098	0.122
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + URM \times T = 0$	0.119	0.016**	0.203	0.518	0.103	0.007***	0.931	0.869	0.171	0.043**	0.176	0.381
Panel B: LATE Estimates												
Any T	0.007	-0.173	-0.025	-0.308	0.064	-0.105	0.154	0.309	-0.165	-0.587	0.014	-0.098
	(0.109)	(0.164)	(0.168)	(0.245)	(0.151)	(0.221)	(0.179)	(0.276)	(0.218)	(0.359)	(0.072)	(0.106)
URM × Any T	0.289	0.699**	0.352	0.520	0.317	0.908**	-0.177	-0.251	0.663	1.618**	-0.203	-0.073
	(0.220)	(0.288)	(0.305)	(0.406)	(0.275)	(0.372)	(0.332)	(0.448)	(0.430)	(0.665)	(0.157)	(0.219)
URM	-0.074	-0.215*	-0.096	-0.188	-0.049	-0.293	0.162	0.345	-0.313*	-0.726**	0.098	0.030
	(0.091)	(0.127)	(0.130)	(0.178)	(0.120)	(0.184)	(0.140)	(0.216)	(0.175)	(0.302)	(0.068)	(0.111)
Female	-0.094**		-0.079		0.137***		-0.058		-0.377***		-0.032	
	(0.043)		(0.060)		(0.052)		(0.069)		(0.080)		(0.027)	
Observations	373	141	373	141	373	141	373	141	373	141	373	141
Control Mean	-0.000	-0.037	-0.000	0.046	0.000	0.058	-0.000	-0.065	0.000	-0.186	0.098	0.122
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + URM \times T = 0$	0.123	0.026**	0.203	0.506	0.099*	0.007***	0.935	0.866	0.177	0.063*	0.178	0.368

Notes: This table reports OLS estimates where the dependent variables are the Aggregated Well-being index, the Sense of Belonging index, the Growth Mindset index, the Self-efficacy index, the Emotional Well-being index, and the likelihood of having moderate, high, or very high chances of changing majors. The indexes are calculated as weighted averages of the underlying variables (described in Table A.1), where the weights are inversely related to the degree of correlation between the underlying variables (see Anderson (2008)). The Aggregated Well-being index is an aggregated measure of the 4 indexes of interest. All indexes are standardized around their Control mean. Therefore, estimates are expressed in standard deviations from the Control mean. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, and self-reported GPA. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, and therefore have missing GPA values. We input the missing values with the mean GPA observed in the full sample, and we include a dummy variable equal to 1 for the survey respondents who have inputted GPA values, and 0 otherwise. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.13: Treatment effects on Survey outcomes
Specification with Female interaction

	Aggregated Well-being		Sense of Belonging		Growth Mindset		Self-Efficacy		Emotional Well-being		Change major?	
	All	URM	All	URM	All	URM	All	URM	All	URM	All	URM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: OLS Estimates												
Any T	0.057	0.077	0.132	0.273	0.041	0.004	0.021	0.041	0.033	-0.011	0.012	-0.117
	(0.057)	(0.163)	(0.089)	(0.221)	(0.075)	(0.163)	(0.092)	(0.239)	(0.100)	(0.234)	(0.039)	(0.098)
Female × Any T	-0.036	0.204	-0.232*	-0.141	0.074	0.423*	0.068	-0.006	-0.055	0.539	-0.078	0.031
	(0.094)	(0.204)	(0.136)	(0.284)	(0.128)	(0.218)	(0.148)	(0.315)	(0.189)	(0.368)	(0.064)	(0.149)
Female	-0.065	-0.215	0.094	0.017	0.088	-0.163	-0.102	0.084	-0.339**	-0.797**	0.026	-0.102
	(0.080)	(0.180)	(0.115)	(0.258)	(0.116)	(0.198)	(0.125)	(0.272)	(0.165)	(0.313)	(0.057)	(0.135)
URM	0.034		0.035		0.072		0.100		-0.069		0.022	
	(0.050)		(0.067)		(0.056)		(0.077)		(0.096)		(0.033)	
Observations	373	94	373	94	373	94	373	94	373	94	373	94
Control Mean	-0.000	-0.065	-0.000	-0.075	0.000	-0.038	-0.000	0.119	0.000	-0.266	0.098	0.160
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + Fem \times T = 0$	0.783	0.027**	0.330	0.461	0.261	0.007***	0.443	0.862	0.891	0.074*	0.201	0.429
Panel B: LATE Estimates												
Any T	0.128	0.175	0.299	0.605	0.093	0.018	0.046	0.091	0.076	-0.013	0.028	-0.260
	(0.127)	(0.361)	(0.203)	(0.483)	(0.168)	(0.363)	(0.206)	(0.504)	(0.224)	(0.522)	(0.086)	(0.211)
Female × Any T	-0.086	0.346	-0.481*	-0.364	0.128	0.778*	0.124	-0.027	-0.116	0.997	-0.153	0.102
	(0.188)	(0.431)	(0.276)	(0.578)	(0.256)	(0.454)	(0.299)	(0.624)	(0.372)	(0.753)	(0.129)	(0.290)
Female	-0.065	-0.212	0.091	0.041	0.090	-0.170	-0.101	0.087	-0.339**	-0.807**	0.025	-0.111
	(0.078)	(0.191)	(0.112)	(0.269)	(0.113)	(0.209)	(0.122)	(0.278)	(0.161)	(0.324)	(0.056)	(0.135)
URM	0.032		0.033		0.068		0.097		-0.070		0.023	
	(0.049)		(0.066)		(0.055)		(0.076)		(0.094)		(0.033)	
Observations	373	94	373	94	373	94	373	94	373	94	373	94
Control Mean	-0.000	-0.065	-0.000	-0.075	0.000	-0.038	-0.000	0.119	0.000	-0.266	0.098	0.160
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + Fem \times T = 0$	0.764	0.031**	0.341	0.448	0.252	0.006***	0.439	0.857	0.894	0.084*	0.201	0.415

Notes: Panel A displays OLS estimates where the dependent variables are the Aggregated Well-being index, the Sense of Belonging index, the Growth Mindset index, the Self-efficacy index, the Emotional Well-being index, and the likelihood of having moderate, high, or very high chances of changing majors. Panel B displays Local Average Treatment Effects (LATE) models, estimated via a 2SLS regression, where being "fully treated", i.e., opening all the emails, is instrumented by the initial assignment of students to treatments. The indexes are calculated as weighted averages of the underlying variables (described in Table A.1), where the weights are inversely related to the degree of correlation between the underlying variables (see Anderson (2008)). The Aggregated Well-being index is an aggregated measure of the 4 indexes of interest. All indexes are standardized around their Control mean. Therefore, estimates are expressed in standard deviations from the Control mean. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, and self-reported GPA. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, and therefore have missing GPA values. We input the missing values with the mean GPA observed in the full sample, and we include a dummy variable equal to 1 for the survey respondents who have inputted GPA values, and 0 otherwise. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.14: Treatment Effects on Questions Entering the Sense of Belonging Index

	Sense of Belonging		Q1		Q2		Q3		Q4		Q5		Q6		Q7	
	All	Female	All	Female	All	Female	All	Female	All	Female	All	Female	All	Female	All	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Any T	-0.012	-0.161	-0.019	-0.301	-0.118	-0.265	-0.121	-0.132	0.007	-0.099	0.063	0.017	0.076	0.011	0.006	-0.316
	(0.079)	(0.130)	(0.138)	(0.219)	(0.170)	(0.284)	(0.146)	(0.256)	(0.084)	(0.133)	(0.151)	(0.264)	(0.129)	(0.213)	(0.163)	(0.273)
URM × Any T	0.178	0.276	0.273	0.424	-0.054	-0.233	0.090	0.134	0.032	0.124	0.503	0.382	0.283	0.704	0.165	0.596
	(0.152)	(0.220)	(0.286)	(0.393)	(0.360)	(0.574)	(0.288)	(0.447)	(0.144)	(0.221)	(0.351)	(0.529)	(0.270)	(0.430)	(0.310)	(0.463)
URM	-0.096	-0.181	-0.160	-0.241	0.389	0.358	-0.147	-0.095	0.075	0.009	-0.423	-0.287	-0.103	-0.367	-0.300	-0.814*
	(0.131)	(0.179)	(0.254)	(0.336)	(0.318)	(0.510)	(0.237)	(0.366)	(0.115)	(0.178)	(0.319)	(0.477)	(0.234)	(0.372)	(0.276)	(0.416)
Female	-0.077		0.005		-0.236*		-0.126		0.001		-0.121		-0.055		-0.152	
	(0.061)		(0.110)		(0.137)		(0.122)		(0.063)		(0.124)		(0.105)		(0.122)	
Observations	373	141	373	141	373	141	373	141	373	141	373	141	373	141	373	141
Control Mean	-0.000	0.046	3.761	3.927	3.370	3.415	2.924	2.878	1.576	1.634	3.446	3.439	3.598	3.537	2.870	2.902
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + URM \times T = 0$	0.203	0.518	0.309	0.710	0.586	0.322	0.899	0.995	0.732	0.887	0.073*	0.378	0.131	0.055*	0.516	0.446

Notes: This table reports OLS estimates where the dependent variables are the Sense of Belonging index and the questions entering the index. The index is calculated as a weighted average of the underlying variables, where the weights are inversely related to the degree of correlation between the underlying variables (see Anderson (2008)). The index is standardized around its Control mean. Therefore, estimates are expressed in standard deviations from the Control mean. Q1 asks for agreement or disagreement with the statement: "I feel that the department of economic values students like me." Q2 asks for agreement or disagreement with the statement: "I sometimes doubt that economics is the right major for me." Q3 asks for agreement or disagreement with the statement: "I feel different from the typical economics student." Q4 asks for agreement or disagreement with the statement: "Do you have close friends on campus among fellow economics students?." Q5 asks for agreement or disagreement with the statement: "I felt comfortable asking questions in my econ classes." Q6 asks for agreement or disagreement with the statement: "I found it hard to connect with classmates in my econ classes." Q7 asks for agreement or disagreement with the statement: "I found it hard to connect with professors in my econ classes." All questions except Q4 are coded on a scale from 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." Q4 is coded on a scale from 1 to 3, where 1 indicates "no" and 3 indicates "yes, many." Q2, Q3, and Q7 are rescaled so that higher values indicate more positive feelings. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, and self-reported GPA. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, and therefore have missing GPA values. We input the missing values with the mean GPA observed in the full sample, and we include a dummy variable equal to 1 for the survey respondents who have inputted GPA values, and 0 otherwise. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.15: Treatment Effects on Questions Entering the Growth Mindset Index

	Growth Mindset		Q1		Q2		Q3		Q4	
	All	Female	All	Female	All	Female	All	Female	All	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Any T	0.029	-0.050	-0.045	-0.180	-0.068	-0.143	0.029	-0.119	0.087	0.136
	(0.071)	(0.122)	(0.153)	(0.260)	(0.181)	(0.319)	(0.071)	(0.122)	(0.054)	(0.083)
URM × Any T	0.163	0.485**	0.607**	0.963**	0.120	0.652	0.022	0.340*	-0.068	-0.070
	(0.138)	(0.201)	(0.304)	(0.431)	(0.380)	(0.641)	(0.134)	(0.203)	(0.097)	(0.107)
URM	-0.049	-0.267	-0.341	-0.755**	-0.034	-0.379	0.099	-0.113	0.032	0.114
	(0.122)	(0.183)	(0.270)	(0.375)	(0.336)	(0.568)	(0.115)	(0.180)	(0.086)	(0.105)
Female	0.144***		-0.204*		0.605***		0.019		0.115***	
	(0.051)		(0.121)		(0.142)		(0.054)		(0.034)	
Observations	373	141	373	141	373	141	373	141	373	141
Control Mean	0.000	0.058	3.630	3.537	2.913	3.146	0.500	0.537	0.815	0.854
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + URM \times T = 0$	0.103	0.007***	0.033**	0.029**	0.875	0.353	0.655	0.177	0.821	0.356

Notes: This table reports OLS estimates where the dependent variables are the Growth Mindset index and the questions entering the index. The index is calculated as a weighted average of the underlying variables, where the weights are inversely related to the degree of correlation between the underlying variables (see Anderson (2008)). The index is standardized around its Control mean. Therefore, estimates are expressed in standard deviations from the Control mean. Q1 asks for agreement or disagreement with the statement: "My experience in Fall 2021 made me more confident in my abilities and my potential." Q2 asks for agreement or disagreement with the statement: "If I do poorly in an economics assignment or exam, I start questioning my ability to major in economics." Q3 asks "If you encountered difficulties in an economics course in Fall 2021, and studying harder did not improve your performance, what strategy did you take?" Q4 asks "If you encounter difficulties in an economics course in Spring 2022, what strategy do you think you will most likely take to improve your grade?" Q1 and Q2 are coded on a scale from 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." For Q3 and Q4, the responses "Study with classmates", "Visit office hours", "Find a tutor", "Talk to my Economics advisor", and "Seek academic coaching/studying skill help" are coded as 1. The responses "drop the class" and "none of these. I kept studying on my own" are coded as 0. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, and self-reported GPA. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, and therefore have missing GPA values. We input the missing values with the mean GPA observed in the full sample, and we include a dummy variable equal to 1 for the survey respondents who have inputted GPA values, and 0 otherwise. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.16: Treatment Effects on Questions Entering the Self-Efficacy Index

	Self-Efficacy		Q1		Q2		Q3		Q4		Q5	
	All	Female	All	Female	All	Female	All	Female	All	Female	All	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Any T	0.072	0.164	0.079	0.144	0.151	0.234	0.030	0.014	0.033	0.028	-0.053	0.276
	(0.084)	(0.147)	(0.081)	(0.160)	(0.135)	(0.212)	(0.104)	(0.154)	(0.135)	(0.224)	(0.123)	(0.203)
URM × Any T	-0.084	-0.132	-0.201*	-0.288	-0.080	-0.143	0.049	-0.028	0.036	0.045	0.117	0.258
	(0.167)	(0.243)	(0.120)	(0.202)	(0.267)	(0.399)	(0.199)	(0.284)	(0.243)	(0.370)	(0.259)	(0.399)
URM	0.161	0.347	0.134	0.356**	0.492**	0.695**	0.043	0.147	0.059	0.032	-0.037	0.113
	(0.141)	(0.214)	(0.099)	(0.170)	(0.213)	(0.312)	(0.158)	(0.246)	(0.211)	(0.324)	(0.220)	(0.349)
Female	-0.052		-0.005		0.014		0.022		-0.175*		-0.051	
	(0.069)		(0.056)		(0.118)		(0.084)		(0.101)		(0.098)	
Observations	373	141	373	141	373	141	373	141	373	141	373	141
Control Mean	-0.000	-0.065	4.728	4.707	3.109	3.098	4.098	4.171	4.098	4.000	3.750	3.488
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + URM \times T = 0$	0.931	0.869	0.167	0.195	0.757	0.787	0.638	0.955	0.734	0.813	0.778	0.122

Notes: This table reports OLS estimates where the dependent variables are the Self-Efficacy index and the questions entering the index. The index is calculated as a weighted average of the underlying variables, where the weights are inversely related to the degree of correlation between the underlying variables (see Anderson (2008)). The index is standardized around its Control mean. Therefore, estimates are expressed in standard deviations from the Control mean. Q1 asks for confidence with the statement: "How confident are you that you will graduate from Texas A&M with a 4-year degree?" Q2 asks for confidence with the statement: "How confident are you that you will be able to get your ideal job in the next 5 years?" Q3 asks "Do you think you can be successful studying and later working in the field of economics?" Q4 asks for agreement or disagreement with the statement: "Last semester, I believed that I could learn the material and succeed in my econ classes" Q5 asks for confidence with the statement: "How confident are you that you can learn the material presented in your current economics classes?" Q1, Q2, and Q5 are coded on a scale from 1 to 5, with 1 indicating "not at all" and 5 indicating "extremely confident." Q3 is coded on a scale from 1 to 5, with 1 indicating "no" and 5 indicating "yes, to a great extent." Q4 is coded on a scale from 1 to 5, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, and self-reported GPA. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, and therefore have missing GPA values. We input the missing values with the mean GPA observed in the full sample, and we include a dummy variable equal to 1 for the survey respondents who have inputted GPA values, and 0 otherwise. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.17: Treatment Effects on Questions Entering the Emotional Well-being Index

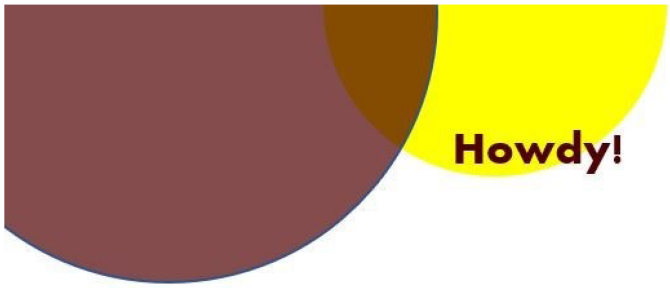
	Emotional Well-being		Q1		Q2		Q3		Q4		Q5	
	All	Female	All	Female	All	Female	All	Female	All	Female	All	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Any T	-0.078	-0.303	0.091	-0.019	-0.116	-0.254	-0.049	-0.165	-0.022	-0.119	-0.000	-0.273*
	(0.102)	(0.194)	(0.084)	(0.142)	(0.106)	(0.194)	(0.087)	(0.147)	(0.094)	(0.158)	(0.087)	(0.150)
URM × Any T	0.330	0.861**	-0.147	-0.123	0.500**	0.805**	0.096	0.533*	0.085	0.339	0.088	0.607**
	(0.213)	(0.334)	(0.163)	(0.238)	(0.232)	(0.363)	(0.191)	(0.277)	(0.176)	(0.283)	(0.157)	(0.236)
URM	-0.312*	-0.693**	0.022	0.051	-0.426**	-0.677**	-0.144	-0.461*	-0.065	-0.332	-0.123	-0.373*
	(0.176)	(0.295)	(0.131)	(0.194)	(0.202)	(0.312)	(0.160)	(0.251)	(0.143)	(0.237)	(0.122)	(0.198)
Female	-0.378***		-0.080		-0.498***		-0.133**		-0.199***		-0.105	
	(0.079)		(0.070)		(0.085)		(0.067)		(0.071)		(0.064)	
Observations	373	141	373	141	373	141	373	141	373	141	373	141
Control Mean	0.000	-0.186	2.717	2.756	2.630	2.366	3.402	3.293	2.391	2.293	3.109	3.122
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H_0 : T + URM \times T = 0$	0.171	0.043**	0.687	0.472	0.063*	0.076*	0.777	0.125	0.667	0.341	0.493	0.069*

Notes: This table reports OLS estimates where the dependent variables are the Emotional Well-being index and the questions entering the index. The index is calculated as a weighted average of the underlying variables, where the weights are inversely related to the degree of correlation between the underlying variables (see Anderson (2008)). The index is standardized around its Control mean. Therefore, estimates are expressed in standard deviations from the Control mean. Q1 asks for frequency with the statement: "How much of the time during the past two months have you been a happy person?" Q2 asks for frequency with the statement: "How much of the time during the past two months have you been a very nervous person?" Q3 asks for frequency with the statement: "How much of the time during the past two months have you felt so down in the dumps that nothing could cheer you up?" Q4 asks for frequency with the statement: "How much of the time during the past two months have you felt calm and peaceful?" Q5 asks for frequency with the statement: "How much of the time during the past two months have you felt downhearted and blue?" The five questions are coded on a scale from 1 to 4, with 1 indicating "all of the time" and 4 indicating "none of the time." Q1 and Q4 are rescaled so that higher values indicate more positive feelings. "Any T" is an indicator variable equal to 1 if the student was assigned to either T1, T2, or T3. Controls for all specifications include Female, URM, year of study, and self-reported GPA. 56 students (15 percent of the survey sample) did not answer the GPA question in the survey, and therefore have missing GPA values. We input the missing values with the mean GPA observed in the full sample, and we include a dummy variable equal to 1 for the survey respondents who have inputted GPA values, and 0 otherwise. Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

B Examples of Emails Sent to Treatment Groups

Email number 1 - Treatment 1

Subject: [Test Email] TAMU Department of Economics: YOU BELONG HERE (week 1)
From: TAMU Dept of Economics <dserra@tamu.edu>
Date: 11/15/2021, 10:20 AM
To: dserra@tamu.edu



Dear Mitchell

On behalf of the Department of Economics, I will be emailing you every week for the rest of the semester to let you know that we are so glad you are here! This is my week 1 email.

As the end of the semester approaches, I would like to encourage you to keep pushing. Everyone goes through rough patches in their semester, and if that's you right now, there are plenty of resources to help, whether that is academically or personally. I would also like to remind you that:

You belong here and you can do this!

Here are some resources available to help you:
- Economics Tutoring Lab
- Campus Mental Health Services
- First Generation Student Center

Thanks and Gig 'Em, Aggies!

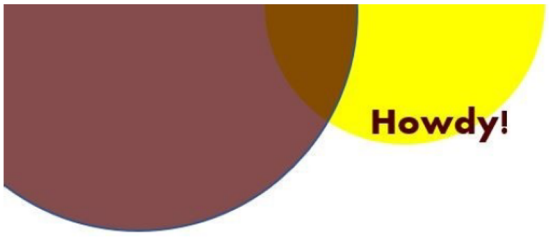
Dr. Serra
TAMU Dept. of Economics



Email number 1 - Treatment 2

(Omitting the Role Model's Identifying Information)

Subject: [Test Email] TAMU Department of Economics: YOU BELONG HERE (week 1)
From: TAMU Dept of Economics <dserra@tamu.edu>
Date: 11/15/2021, 10:46 AM
To: dserra@tamu.edu



Dear Stephen,

On behalf of the Department of Economics, I will be emailing you every week for the rest of the semester to let you know that we are so glad you are here! This is my week 1 email.

As the end of the semester approaches, I would like to encourage you to keep pushing. Everyone goes through rough patches in their semester, and if that's you right now, there are plenty of resources to help, whether that is academically or personally. I would also like to remind you that:

You belong here and you can do this!

Former Student Profile

Here is a former TAMU student who has been in your shoes and successfully graduated with an economics major!



[redacted]

Current job: Data Analyst
Company: Bloomberg LP

Here are some resources available to help you:
- Economics Tutoring Lab
- Campus Mental Health Services
- First Generation Student Center

Thanks and Gig 'Em, Aggies!

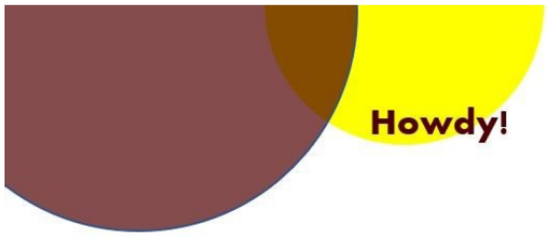
Dr. Serra
TAMU Dept. of Economics



Email number 1 - Treatment 3

(Omitting the Role Model's Identifying Information)

Subject: [Test Email] TAMU Department of Economics: YOU BELONG HERE (week 1)
From: TAMU Dept of Economics <dserra@tamu.edu>
Date: 11/15/2021, 11:12 AM
To: dserra@tamu.edu



Dear Travis,

On behalf of the Department of Economics, I will be emailing you every week for the rest of the semester to let you know that we are so glad you are here! This is my week 1 email.

As the end of the semester approaches, I would like to encourage you to keep pushing. Everyone goes through rough patches in their semester, and if that's you right now, there are plenty of resources to help, whether that is academically or personally. I would also like to remind you that:

You belong here and you can do this!

Former Student Profile

Here is a former TAMU student who has been in your shoes and successfully graduated with an economics major!



[redacted]

Current job: Data Analyst
Company: Bloomberg LP
A word from [redacted]

"In my first semester at TAMU I had horrible grades -- in fact I actually was on academic probation. Everyone has their transitional period in college, oftentimes the first semester or year. **You have to give yourself space to make mistakes and have confidence that you were accepted to TAMU for a reason** and that you will be able to thrive even if there are ups and downs."

Here are some resources available to help you:
- Economics Tutoring Lab
- Campus Mental Health Services
- First Generation Student Center

Thanks and Gig 'Em, Aggies!

Dr. Serra
TAMU Dept. of Economics

