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Relevance, Belonging, and Growth Mindsets in Economics: Differences across Institution Types

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Abstract
The underrepresentation of minority students and women in economics exceeds that of STEM fields and, while STEM fields have improved representation over time, economics has made less progress. Past research has established that under-represented minority and women students have significantly lower relevance, belonging, and growth mindset (RBG) in predominantly white institutions (PWIs) and co-ed settings (Bayer, Bhanot, Bronchetti, & O'Connell, 2020). Lower RBG is linked to worse grades and lower persistence in economics majors. There has been no research to date on RBG at minority serving institutions (MSIs) or women's colleges nor on whether these identity-affirming institutions may foster RBG and persistence. This paper investigates the role RBG plays as a potential barrier or lever for change across different institutional settings. We find that minority students had significantly lower overall RBG ratings, as well as for each dimension of RBG. Female students did not have a significant difference in overall RBG compared to male/non-binary students. Women did, however, have significantly higher relevance than their counterparts. These differences may be because students at women's colleges, which we over-sampled, have significantly higher relevance than co-ed colleges. There is also some evidence that women have lower economics growth mindset, but that women's colleges are associated with higher growth mindset in economics. In our multivariate results, we demonstrate that while some of the differences in RBG persist, others are explained by differences in covariates, particularly household income, highlighting disparities in RBG by socioeconomic status as an important area for future research.

Keywords: Economics education; race; ethnicity; gender; women's colleges; minority-serving institutions
JEL codes: A22, I23, J15, J16

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1 Introduction

Racial/ethnic minority and female students are underrepresented in a number of fields of study, however, this issue is particularly acute and persistent in economics. The percentage of undergraduate economics degrees awarded to minority students (19%) is lower than the percentage of undergraduate science, technology, engineering and math (STEM)[2] degrees awarded to minority students (22%) (CSMGEP, 2022). Furthermore, the share of degrees awarded to minority students has increased at a much slower rate in economics than in STEM (CSMGEP 2022). The share of female economics college graduates (36%) is far below the share of female college graduates (55%) and this too has made little progress in recent years (Chari, 2022).

There are a number of studies that attempt to understand the lack of diversity in economics and to gauge the relative success of different interventions (Bayer, Bhanot, Bronchetti, & O'Connell, 2020; Bayer, Bhanot, & Lozano, 2019; Bayer, Bruich, Chetty, & Housiaux, 2020; Bayer, Hoover, & Washington, 2020; Becker, Rouse, & Chen, 2016; Benjamin, Cohen, & Hamilton, 2020; Buckles, 2019; Fairlie, Hoffmann, & Oreopoulos, 2014; Goldin, 2016; Lundberg & Stearns, 2019; Lusher, Campbell, & Carrell, 2018; Porter & Serra, 2020; Stevenson & Zlotnick, 2018). One limitation of the existing literature on inclusion in economics is that it focuses primarily on predominantly white institutions (PWIs) and co-ed settings, and either R1 institutions or elite liberal arts institutions (e.g., Bayer, Bhanot, Bronchetti, & O'Connell, 2020; Bayer, Bruich, Chetty, & Housiaux, 2020; Bottan, McKee, Orlov, & McDougall, 2022; Goldin, 2015). These institutions are important training grounds for future academic economists but they do not serve the majority of students (Hersch, 2019).

Making progress towards inclusion at scale will require an understanding of how minority and female students experience economics education in a variety of settings. Minority students are more likely to attend less-selective institutions, including many two-year colleges and minority serving institutions (MSIs) (Georgetown University Center on Education and Workforce, 2018; National Academies of Sciences Engineering and Medicine, 2019). These less-selective institutions play a key role in social and economic mobility (Chetty, Friedman, Saez, Turner, & Yagan, 2020; The Upshot, 2017). Gender and racial disparities in rates of majoring in economics are smaller in less-selective institutions than elite programs (Bayer & Wilcox, 2017). Likewise, women's colleges have a long history of promoting gender diversity in male-dominated fields such as economics (Butcher, McEwan, & Weerapana, 2023; Calkins, Binder, Shaat, & Timpe, 2023).

MSIs and women's colleges play an outsized role in preparing underrepresented students. For example, historically black colleges and universities (HBCUs, a type of MSI) account for only 1.5% of college students but fully 13.0% of Black college graduates and nearly one quarter of all Black PhD holders in science and engineering (Price & Viceisza, 2023). Women's colleges enroll less than 1% of women in the country but 9% of female CEOs in the S&P 500 and 10% of female U.S. Senate members graduated from historically women's institutions (Kiss, 2020).

[2] Economics is generally classified as a social science in the United States (e.g., National Center for Science and Engineering Statistics, 2021), however, economics does include substantial quantitative and math coursework, and is sometimes considered part of STEM. For instance, increasing numbers of economics programs are changing their classifications from general economics to econometrics and quantitative economics in order to be classified as STEM programs and thus provide international students with three years, rather than one, of visa eligibility following graduation (Redden, 2018).

Past research at a co-ed PWI finds that underrepresented minority and female students have significantly lower relevance, belonging, and growth mindset (RBG) (Bayer, Bhanot, Bronchetti, & O'Connell, 2020). RBG is a collection of three psychological constructs that measure students perceiving the material to be applicable to their own life (relevance), feeling socially integrated in classes (belonging), and that the ability to understand economics is not fixed (growth mindset). Additionally, they find that lower RBG is linked to worse grades and lower persistence in economics (Bayer, Bhanot, Bronchetti, & O'Connell, 2020). There has been no research to date, however, on RBG in economics at minority serving institutions (MSIs) or women's colleges, a gap this paper fills by examining RBG across a variety of institution types. Increasing the breadth of institutions researched and thus investigating the generalizability of research results on RBG is critical to understanding the ultimate impact of various interventions on diversity in economics.

MSIs and women's colleges – which we refer to as "identity-focused institutions" – have been shown to promote RBG generally as well as pursuit of typically white and male-dominated STEM fields (Calkins, Binder, Shaat, & Timpe, 2023; Kinzie, Thomas, Palmer, Umbach, & Kuh, 2007; National Center for Science and Engineering Statistics, 2021; Perna et al., 2009; White, DeCuir-Gunby, & Kim, 2019). There is some evidence that these institutions may promote representation in economics as well. A case study from North Carolina A&T shows that students at this HBCU start with lower scores on a test of economic knowledge but make progress such that their endline scores are comparable to a similar PWI in the state (Simkins & Allen, 2001). Data from Wellesley College show that, conditional on admittance, attending this women's college nearly doubles the probability of majoring in economics (Butcher, McEwan, & Weerapana, 2023).

There are a number of possible mechanisms via which institution type may influence RBG. Students at women's colleges are more engaged, more challenged, take on more leadership roles, report higher feelings of support and connections with peers and professors, and greater gains in learning, supportive of a higher level of RBG (Kinzie, Thomas, Palmer, Umbach, & Kuh, 2007). Peer groups and peer effects may be particularly important; in an introductory business course women did worse, on average, when randomly assigned to male-dominated groups (Hansen, Owan, & Pan, 2006). The presence of role models, particularly women and minority professors or teaching assistants, may support students' decisions to pursue male-dominated or disproportionately white fields of study (Bayer, Bhanot, Bronchetti, & O'Connell, 2020; Lusher, Campbell, & Carrell, 2018; Porter & Serra, 2020; Rask & Bailey, 2002) and identity-focused institutions may have more same race and gender faculty role models.

We add to the growing literature on the mechanisms and influences that lead racial/ethnic minority students and women to persist or desist in studying economics by investigating RBG for women and racial/ethnic minority students across a variety of institutional settings. We present the results of surveys from 805 students at 24 colleges and universities, to understand differences in RBG by race and gender and among students in economics classes at MSIs and women's colleges versus PWIs and co-ed institutions. We find evidence of lower RBG overall and across all three dimensions of RBG among minority-identifying students. We also find lower growth mindset among students at MSIs. In contrast, we find no significant differences in RBG overall for women, and greater relevance for women. This result may be driven by our over-sampling of women's colleges, where relevance is higher than for co-educational settings. In our multivariate models, only some of these results persist, suggesting that differences such as household income may also be key mediators of disparities.

In what follows, we first describe our surveys that collected data on faculty, classes, and students. Next we explain our methods for assessing students' RBG and how this varies by institution type and interacts with students' identities. The subsequent section presents our results including descriptives by institution type as well as student's own racial and gender identity. In addition to comparison of raw means, we examine RBG in a multivariate regression format and demonstrate that, even conditional on covariates, there are interesting differences across institutions and groups. The final section discusses key implications, limitations, and directions for future research.

2 Data

2.1 Sample of institutions

This paper draws on a Fall 2022 survey of 49 faculty and 805 students at 24 colleges and universities, to understand differences in RBG among students in economics classes at MSIs and women's colleges versus PWIs and co-ed institutions.[3] Our sample was stratified by degree level (four-year/baccalaureate vs. two-year/associate programs), gender composition (women's colleges[4] vs. co-educational institutions), and racial/ethnic composition (MSIs vs. PWIs) to ensure we have a sufficient sample of all types of schools to detect important differences. This sampling approach is a substantial improvement on past economics RBG research. Bayer et al.'s (2020) seminal work, for example, used only a single university and a sample that included 102 non-underrepresented men and 138 women and under-represented men. Our sample expands the institutional setting and sample size significantly.

There are six combinations (strata) of two vs. four-year, women vs. co-educational, and MSI vs. PWI composition, since there are no two-year women's colleges. Our final sample included five PWI co-ed four-year institutions, four MSI co-ed four-year institutions, six PWI women's four-year institutions, two MSI women's four-year institutions, four PWI two-year institutions, and three MSI two-year institutions.[5] In what follows we describe how we selected this sample.

Our sampling frame started with schools that are listed in the 2020 Integrated Postsecondary Education Data System (IPEDS) (U.S. Department of Education National Center for Education Statistics, 2020).[6] The 2020 IPEDS data cover the 2019-2020 school year. We excluded all for-profit institutions as well as schools with no undergraduate enrollment and schools without a Carnegie classification (not accredited, not degree granting) and those that have closed since 2020. We further excluded institutions that offer economics PhDs (at least one degree in IPEDS data) in order to focus on undergraduate economics education in more comparable schools. We restricted our sample to schools offering a two-year (associate) or four-year (baccalaureate) undergraduate degree. For four-year institutions, we limited the sampling frame to schools with at least one economics major granted in 2020 (first or second major). For two-year institutions, we collected data from public websites to determine which schools offer

[3] Our pre-analysis plan, including details of sampling, outcomes, covariates, and analysis methods, was registered with OSF (https://osf.io/project/enrck/files/osfstorage/62f274285a24362376272dd2).

[4] Schools were coded as women's colleges if they belong to the Women's College Coalition (Women's College Coalition, 2022).

[5] We had originally planned on sampling 18 institutions, however due to low participation rates either on part of faculty or students, we decided to increase the number of institutions in our sample.

[6] IPEDS gathers information from every college, university, and technical/vocational institution that participates in the federal student aid programs (Title IV-eligible institutions). Schools not eligible for student aid programs can request to be part of IPEDS.

economics classes. Two coders searched for economics courses at each two-year institution; if neither could find a course, then the school was dropped from the sampling frame.

We relied on the Department of Education's eligibility matrix for MSI designations for 2020 (U.S. Department of Education, 2020). The MSI designation allows schools to access federal grants and programs. The MSI designation combines different federally recognized categories of institutions. A school is an MSI if it is among the following institution types: Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribally Controlled Colleges & Universities (TCCUs), Alaska Native and Native Hawaiian Serving Institutions (ANNHs), Predominantly Black Institutions (PBIs), Asian American and Pacific Islander Serving Institutions (AAPISIs), and Native American-serving nontribal institutions (NASNTIs) (U.S. Department of Education, 2023).[7] Many schools listed as MSIs in the eligibility matrix have always been categorized as MSIs due to their history, mission and admissions criteria (e.g., HBCUs) but others go on and off the eligibility list due to changes in enrollment demographics. Institutions that are not designated as MSIs by the Department of Education in 2020 are coded as PWIs.[8]

Our sampling frame includes institutions in four states in three regions of the United States. Drawing from a limited roster of states enabled state fixed effects. The four states were chosen for the sampling frame to maximize the chance of a balanced sample across the six strata, as they had a number of MSIs and women's colleges. Five institutions were initially selected given strata size and project networking goals. We then restricted the remainder of the sample to have enrollment below the maximum in the five initial institutions.

The remainder of the sample was chosen to maximize balance across three key institutional covariates. We used a bootstrapping strategy (with 100,000 different random samples) to choose the sample of institutions that was as balanced as possible across strata for three key variables (all drawn from IPEDS): (1) the percent of first year undergraduate students awarded Pell grants; (2) selectivity as measured by percent of applicants admitted;[9] (3) and the student-faculty ratio. Specifically, we minimized the chi-square from a multinomial logit where the dependent variable is the six strata categories. Having drawn an initial sample (chi-square=7.748, p-value=0.560), we iteratively contacted schools from the least to most common strata. When schools refused to participate, we adjusted the sample for subsequent strata by resampling as needed to try to retain balance. Our sampling goal was to have three of each institution type per strata. However, this was adjusted as needed during the sampling process.

The research team emailed all economics faculty listed on the school websites for each institution sampled. The email described the requirements and the stipend[10] for participation and gave faculty at the school one week to respond. After one week we sent a follow up email and if we had not heard back from any of the faculty at the school, we removed them from the sampling frame. If we heard from at least one faculty member, we included that school in the sample. Resampling had to be done eight times before arriving at the final sample. We contacted

[7] We code a school as an MSI if it is potentially eligible, eligible, or currently a grantee for any of the following categories (A and F refer to different parts of the Higher Education Act): AANAPISI, AANAPISI F, ANNH, ANNH F, HBCU, HBCU - Funding at Masters level, Historically Black Graduate Institutions, HSI, HSI - Funding for STEM Programs, Minority Science and Engineering Improvement Program, NASNTI, NASNTI F, PBI F, PBI A, Promoting Postbaccalaureate Opportunities for Hispanic Americans Program, or TCCU.

[8] Schools that are not listed on the eligibility matrix are dropped from the sampling frame.

[9] This variable was not available for two-year institutions in IPEDS, but given their open admissions policies, we set it to 100%.

[10] The stipend was $1,000 per institution, divided among the faculty who ultimately participated at that institution.

ten PWI co-ed four-year institutions, seven MSI co-ed four-year institutions, six PWI women's four-year institutions, two MSI women's four-year institutions, fourteen PWI two-year institutions, and six MSI two-year institutions across all eight samples (45 total institutions). Of the institutions contacted, five PWI co-ed four-year institutions, five MSI co-ed four-year institutions, six PWI women's four-year institutions, two MSI women's four-year institutions, four PWI two-year institutions, and three MSI two-year institutions participated.[11] The final sample drawn had a chi-square =10.860, p-value=0.285.

2.2 Sample of faculty, courses, and students

Primary data collection was implemented at the start of the 2022 academic year and lasted through mid-December 2022.[12] Our sample is made up of 805[13] undergraduate students[14] taking economics during the fall semester of 2022 in 105 undergraduate classes taught by 49 faculty[15] at 24 institutions. Table 1 provides institution, class, faculty, and student sample sizes. We also show summary statistics by PWI vs. MSI and co-ed vs women's colleges since these are the primary institutional differences we focus on in our analysis. By design, we had relatively similar numbers of classes, faculty, and students in MSIs vs. PWIs and co-ed versus women's colleges.

[11] The first through fourth samples contained three PWI co-ed four-year institutions, three MSI co-ed four-year institutions, four PWI women's four-year institutions, two MSI women's four-year institutions, three PWI two-year institutions, and three MSI two-year institutions (18 total). From the first sample eight institutions agreed to participate (and thus we resampled for the remaining 10). From the second sample five additional institutions agreed to participate. From each of the third and fourth samples we had an additional two institutions participate. Starting with the fifth sample, the sample targeted one more PWI co-ed four-year institution than the previous samples to account for low response rates within that institution type. There were no additional institutions willing to participate from the fifth sample. The sixth sample included one more PWI co-ed four-year institution and one more PWI two-year institution than the previous sample to address low response rates. From the sixth sample one more institution agreed to participate. The seventh sample, given lower faculty and student response rates than targeted in data collected to date, we added a number of additional institutions. The seventh sample included two more MSI co-ed four-year institutions, two more PWI women's four-year institutions, one more PWI two-year institution, and two more MSI two-year institutions than the previous sample. From the seventh sample there were an additional five institutions that agreed to participate in the survey (total of 23). The eighth and final sample, two more institutions agreed to participate in the survey for a total of 25 institutions in the sample. Ultimately one institution had no students complete the surveys and was dropped from the sample.

[12] Originally we had planned to collect data from students at each institution at the start of the second week of classes, however non-response from potential faculty participants at each institution led us to continue sampling and collecting data through the end of the fall semester.

[13] We had initially expected to be able to reach an average of 5 courses per university or 90 courses total, averaging 20 students per course, for a total sample of 1,800 undergraduate students.

[14] There were originally 1,242 observations in the data. However, from those 1,242 observations we only kept complete surveys, surveys of students 18 years of age or older, those who consented to completing the survey, and unique observations for each student. We excluded those pursuing master's degrees, PhDs, or no degree.

[15] These numbers represent final observation counts and do not include observations that were dropped as part of the data cleaning process. Observations dropped during the data cleaning process include incomplete surveys, surveys of students that were not 18 years or older, duplicate survey entries, and surveys of faculty who had zero students complete the student survey in at least one of their classes. Originally there were 59 faculty survey observations, 1,242 student survey observations, and 128 class survey observations.

Table 1. Sample size (number of schools, classes, faculty, and students) by MSI and women's college status

	Institutions	Faculty	Classes	Students
PWI co-ed 4yr	5	10	20	187
MSI co-ed 4yr	4	8	14	126
PWI women's 4yr	6	14	29	219
MSI women's 4yr	2	9	18	152
PWI 2yr	4	4	10	30
MSI 2yr	3	4	14	91
All PWI	15	28	59	436
All MSI	9	21	46	369
All co-ed	16	26	58	434
All women's	8	23	47	371
Total	24	49	105	805

Source: Authors' calculations based on RBG surveys

Only the data of faculty and students who provided consent (in the first question of each survey) was collected and included. Students were asked to complete the survey only once; a question at the start of the survey asked whether they had already completed the survey for another class and collected identifiers if so. Any students pursuing masters/PhD or no degree at baseline were dropped from the sample.

We weighted our sample to account for non-response rates on the faculty, class, and student levels. Denote as F the number of economics faculty at an institution and P the number of economics faculty who responded. Faculty weights were thus F/P. Denote as Q the number of classes that a faculty member taught and T the number of classes with at least one valid student response.[16] Class weights were thus $Q/T*F/P$. Denote as E the number of students enrolled in the class and R the number of students in the class who responded. The student weight is thus $E/R*Q/T*F/P$. The weights thus weight "up" students, classes and faculty with lower response rates.

2.3 Surveys

The faculty survey collected demographic, department, and institution information. Faculty also completed a class specific survey describing each undergraduate economics class they taught during the 2022 fall semester. The student survey collected demographic and background information including the students' degree and major course of study, previous experience with economics and economics coursework, their motivations for studying economics, measures of RBG in the context of their economics class, and their intentions to or interest in pursuing future study in economics. We built the surveys to include similar relevance, belonging, and growth mindset (RBG) items from McDougall et al. (2022) and Bayer et al.

[16] We had not anticipated that some faculty would have some classes with no responses in our pre-analysis plan, so the interim class non-response weight was subsequently added, but in the same spirit as the faculty and student weights initially planned.

(2020), which draw on key psychological constructs (Dweck, 2008; Walton & Cohen, 2011; Yeager & Dweck, 2020), in order to be able to compare our findings to existing literature.

Cognitive interviews for all three surveys were conducted prior to piloting.[17] Four cognitive interviews were conducted with upper-level economics students at one women's college.[18] Cognitive interviews for faculty surveys were also conducted with one professor from a women's college and one professor from a four-year co-ed MSI. Surveys were then piloted between May and July of 2022. The faculty survey was piloted by the same two faculty who participated in the cognitive interview process. We were also able to pilot the student survey tools in two upper-level economics classes (N=46) and three introductory economics classes (N=47) across three different institutions.

2.4 Outcomes: Relevance, belonging, and growth mindset (RBG)

We measured each component of RBG separately through a number of different items. Conceptually, relevance highlights the ways in which students perceive the material to be relevant or useful to their life (Bayer, Bhanot, Bronchetti, & O'Connell, 2020). Belonging shows if the student is socially integrated and feels that they belong in their classes/department. Growth mindset measures if the student believes that their ability in economics is not fixed, but can improve (Bayer, Bhanot, Bronchetti, & O'Connell, 2020).

The specific items relating to relevance were measured on a seven-point Likert scale ranging from strongly disagree to strongly agree and were based on the question, "Please think about the material you have covered in economics courses at [college] and mark your level of agreement with the following statements:

1. Economics textbooks are easy to understand
2. Economics textbooks use examples that are relatable to my life
3. Economics professors use examples that are relatable to my life
4. We discuss important, real world issues in economics classes
5. Economics is giving me a useful framework for thinking about important issues
6. We miss important aspects of the issues we study in economics"

To summarize these items, we undertook factor analysis (principal factor analysis) to generate a single, standardized relevance factor.

The specific items relating to belonging were measured on a seven-point Likert scale ranging from strongly disagree to strongly agree, including an N/A option,[19] and were based on the question, "The next set of statements will ask you about your experience in economics courses at [college] from a student's perspective:

1. Economics class environments are welcoming
2. I feel comfortable asking questions in economics classes
3. I feel economics professors care about whether I was learning the material
4. I feel that economics students support each other
5. I feel supported by the economics tutor or teaching assistant
6. I feel comfortable asking questions during my economics professors' office hours

[17] Cognitive interviews were used to revise confusing points in our survey questions. We checked the student survey pilot data for floor and ceiling effects, along with variation generally, to ensure survey questions were effective. We did not analyze the data prior to pre-registration of our analysis plan beyond this, and the pilot data were not included in analyses.

[18] We originally planned to conduct cognitive interviews for student surveys at two institutions, a women's college and a four-year co-ed MSI, but were able to recruit an additional institution.

[19] N/A responses were set to the mean for each item factoring.

7. I have access to the resources I need to reach my potential in economics
8. People like me can become economists"

We also include a yes/no question on "Do you feel different from the typical economics student?" as part of our measures of belonging. To summarize these items, we undertake factor analysis (principal factor analysis) to generate a single, standardized belonging factor.

The specific items relating to growth mindset were posed in two ways. Two items were asked with the same seven-point Likert scale as for belonging,[20] specifically:

1. "I believe I can learn the economics material
2. I feel economics professors believe I can learn the material"

There were also paired statements that are endpoints on a scale from 0-10. These statements were modeled after Blackwell, Trz and Dweck (2007) and McDougall, McKee and Orlov (2022). Students were specifically asked, "Please indicate which statement you agree the most on in the following scales:

1. Business ability is something you can't change very much. – Business ability can be developed.
2. Math ability is something you can't change very much. – Math ability can be developed.
3. Economics ability is something you can't change very much. – Economics ability can be developed.
4. Writing ability is something you can't change very much. – Writing ability can be developed.
5. Intelligence is something you can't change very much - Intelligence can be developed."

We use the third measure, for economics, as a component in our growth mindset outcome, and include it in a factor with the two Likert-scale growth mindset items, but provide descriptive statistics comparing economics growth mindset to other types of growth mindset.

We run regression models and test hypotheses on each of the relevance, belonging, and growth outcomes, separately, and an overall RBG factor (including all items), as well as the item showing the largest disparity in the descriptives for each of relevance, belonging, and growth mindset.[21]

2.5 Covariates

There are two key covariates on the individual level: female and minority identities. Female is coded as a dummy variable based on a "female" response to the question on gender with possible responses: Male, female, non-binary/third gender,[22] prefer not to say (set to missing and excluded), and prefer to self-describe.[23] Minority is coded as a dummy based on a question on race with multiple responses possible. Any of Black/African American, Asian/Native Hawaiian/Pacific Islander, Hispanic, or prefer to self-describe (based on review and recoding) were coded as a minority identity. White (non-Hispanic) only is coded as not a minority identity. Prefer not to say is set to missing and excluded. These separate covariates are an improvement over initial research on RBG in economics, which compared non-under-represented minority men to an aggregate of female and/or under-represented minority (Bayer,

[20] These were incorrectly classified as part of belonging in our pre-analysis plan.
[21] Largest disparity is defined based on the average of the absolute values of the female minus male/non-binary and minority identifying minus not minority identifying differences.
[22] We did not expect there to be an adequate sample size to investigate the experiences of non-binary/third gender students separately. We planned to undertake exploratory analyses for this group separately if N>100, but in our sample N=11.
[23] One prefer to self-describe response was reviewed and recoded.

Bhanot, Bronchetti, & O'Connell, 2020). Past research had also specifically focused on under-represented minority students and considered non-underrepresented as both White and Asian (Bayer, Bhanot, Bronchetti, & O'Connell, 2020). It is not, however, established that Asian students' representation in economics degrees means they have similar RBG.

There are two key covariates on the institution level. Women's colleges are identified based on membership in the women's college coalition. All other colleges are coded as co-ed. MSIs are identified based on the Department of Education's 2020 eligibility matrix.

2.6 Controls

There are also student-level and institution-level controls included in the models. On the student level we control for age, household income, and the type of degree the student is pursuing. We control for age as a continuous variable quadratically and control for household income categorically (possible responses: prefer not to say, less than $30,000, $30,000-$49,999, $50,000-$99,999, $100,000-$249,999, $250,000 or more). We control for the type of degree the student is pursuing categorically (possible responses: certificate, associate's, or bachelor's). On the institution level we control for the degree level (categorically, two or four-year), as well as state fixed effects and the IPEDS variables used in the sampling - (1) the percentage of full-time first-time undergraduates who receive Pell grants; (2) selectivity as measured by percentage admitted;[24] (3) the student-faculty ratio. We control for the IPEDS variables as continuous variables and control for state fixed effects categorically.

3 Methods

Our models examine differences in outcomes between individual students (i). Our two key demographic covariates of interest are self-identifying as female (f_i), and self-identifying as a minority (u_i). Models include k controls, $X_{k,i,j}$, for key student (i) and institution (j) characteristics, as discussed above.

An initial contribution of our research is examining whether RBG differs between minority and non-minority students as well as male/non-binary and female students across a variety of contexts. We therefore test:

H1: Female-identifying students have lower RBG than male/non-binary students.

H2: Minority-identifying students have lower RBG than non-minority students.

In order to test H1 and H2, we run ordinary least squares (OLS) regressions on RBG for the various dimensions (d) of RBG:

$$RBG_{d,i} = \beta_0 + \beta_1 f_i + \beta_2 u_i + \beta_k X_{k,i,j} + \varepsilon_i$$

To test H1, we examine the statistical significance of the estimated coefficient on the female-identifying variable, β_1. To test H2, we examine the statistical significance of the estimated coefficient on the minority-identifying variable, β_2. We estimate this model for the pooled sample but also for the sub-samples of students attending MSIs and PWIs as well as co-ed and women's colleges separately. This division will establish whether differences in various measures of RBG are consistent across types of institutions.

We also investigate whether there are interactions between gender and minority identity, specifically:

H3: There is an interaction between being female and minority-identifying

[24] Two-year colleges did not have this variable in IPEDS and were recoded to 100% admit rate.

$$RBG_{d,i} = \beta_0 + \beta_1 f_i + \beta_2 u_i + \beta_3 f_i * u_i + \beta_k X_{k,i,j} + \varepsilon_i$$

To test H3, we will examine the statistical significance of the estimated coefficient on the interaction term, β_3. Throughout, we use robust standard errors.

4 Results

4.1 Sample characteristics

Table 2 provides descriptive statistics and balance tests for school characteristics – percentage of full-time first-time undergraduates awarded Pell grants, student-to-faculty ratio, and percentage admitted – by institution type (PWI vs. MSI, and co-ed vs. women's college). For each of these three metrics MSI co-ed institutions and PWI women's colleges are the most different. The share of Pell grant recipients was 27 percentage points higher, the student-to-faculty ratio was 8 students higher, and the share of students admitted was 33 percentage points higher at MSI co-ed institutions on average compared to at PWI women's colleges. Each of these differences between MSI co-ed institutions and PWI women's colleges is statistically significant as is an F-test of joint significance. MSI women's colleges are also higher than PWI women's colleges on each of these metrics (while none of the individual differences are significant, the F-test shows they are jointly significant). This balance test suggests that our sampling was only able to minimize – not eliminate – the differences on these institutional characteristics. Thus we include these variables as controls in our multivariate analysis.

Table 2. Descriptive statistics and balance tests for school characteristics, by MSI and women's college status

Variable	PWI co-ed (1) Mean	MSI co-ed (2) Mean	PWI women's (3) Mean	MSI women's (4) Mean	t-test p-value (1)-(2)	t-test p-value (1)-(3)	t-test p-value (1)-(4)	t-test p-value (2)-(3)	t-test p-value (2)-(4)	t-test p-value (3)-(4)
Percent of full-time first-time undergraduates awarded Pell grants	46	58	31	46	0.290	0.216	0.969	0.014*	0.310	0.327
Student-to-faculty-ratio	12	17	9	11	0.151	0.185	0.758	0.006**	0.206	0.107
Percent admitted	70	80	47	55	0.542	0.222	0.631	0.028*	0.237	0.650
N	9	7	6	2						
F-test of joint significance (F-stat)					0.872	0.635	0.224	5.909*	0.832	12.265*
F-test, number of observations					16	15	11	13	9	8

Source: Authors' calculations based on RBG surveys and IPEDS 2019-2020 data
Notes: *p<0.05; **p<0.01; ***p<0.001

Table 3 provides descriptive statistics on the faculty in our sample by institution type. Faculty gender and racial representation is quite different by institution type. Identity-focused institutions have better representation – women's colleges have a higher share of female faculty members (67%) and MSIs have a high share of minority-identifying faculty members (31% Black/African American and 33% Asian/Native Hawaiian/Pacific Islander). MSI women's colleges have both the highest share of female faculty (83%) and the highest share of minority-identifying faculty (88%). Within minority faculty respondents, none identify as Indigenous/American Indian/Alaskan Native.

On measures other than race and gender there is more similarity across institution types. In our survey, all institution types have representation of junior, mid-career and senior faculty. Most of the faculty respondents hold PhDs (91%) (although this is slightly lower at MSIs). The top three disciplines represented by faculty respondents are microeconomics, macroeconomics, and general economics (note that on this question faculty could indicate more than one category). Women's colleges have more faculty who specialize in health, education and welfare, labor and demographic economics, and economic development. MSIs have more faculty specialized in agricultural or natural resource economics.

Table 3. Descriptive statistics on faculty, by MSI and women's college status

	PWI co-ed	MSI co-ed	PWI women's	MSI women's	All PWI	All MSI	All co-ed	All women's	Total
Gender									
Male	86	48	39	17	64	38	71	33	56
Female	14	52	61	83	36	62	29	67	44
Race/Ethnicity (Multiple responses possible)									
Black/African American	0	23	0	52	0	31	9	13	10
Asian/Native Hawaiian/Pacific Islander	7	32	10	36	8	33	16	16	16
Hispanic	8	0	18	0	13	0	5	14	9
Indigenous/American Indian/Alaskan Native	0	0	0	0	0	0	0	0	0
White (non-Hispanic)	77	45	75	12	76	35	65	60	63
Years worked at college	8	0	0	0	5	0	5	0	3
Less than 1 year	7	0	0	6	4	2	4	2	3
1 - 5 years	32	15	33	41	32	22	25	34	29
6 - 10 years	10	5	9	6	9	6	8	8	8
11 - 15 years	13	23	12	23	13	23	17	15	16
16 - 20 years	18	40	22	0	20	28	27	16	22
21 + years	20	17	25	23	22	19	19	25	21
Terminal degree									
Masters Degree	8	18	0	17	5	18	12	4	9
PhD	92	82	100	83	95	82	88	96	91
Specialization (Multiple responses possible)									
General Economics and Teaching	32	23	17	17	25	21	28	17	24
Microeconomics	40	32	19	6	30	24	37	16	28
Macroeconomics and Monetary	47	40	3	23	27	35	44	8	29
International Economics	7	17	10	17	8	17	11	11	11
Financial Economics	2	23	3	6	2	18	10	4	7
Health, Education, and Welfare	0	6	16	47	7	19	2	23	11
Labor and Demographic	0	12	24	12	11	12	5	21	11
Economic Development	7	11	21	30	13	17	8	23	14
Agricultural and Environmental	8	39	5	34	7	38	20	12	17
Sub-disciplines with five or fewer observations	12	0	13	17	12	5	7	14	10
Total	100	100	100	100	100	100	100	100	100
N	14	12	14	9	28	21	26	23	49

Source: Authors' calculations based on RBG surveys

Table 4 provides descriptive statistics on classes in our sample by institution type. Of the classes sampled, 78% were held in person but there were notable differences by institution type. PWIs – both co-ed and women's colleges – had almost entirely in person classes while MSIs relied more heavily on hybrid and online courses. Our sample included introductory, intermediate and upper-level classes from all institution types. The higher share of introductory/lower-level classes at co-ed institutions is driven by the fact that all of our two-year institutions are co-ed.

In addition to the class format and level, faculty were asked if they had speakers who were women and/or underrepresented minorities. Research shows that having guest speakers increases persistence in economics (Porter & Serra, 2020) and that this effect may be strongly gendered (Patnaik, Pauley, Venator, & Wiswall, 2023). Women's colleges were much more likely to feature female guest speakers in class and fully 50% of classes at MSI women's colleges feature a speaker who is an underrepresented minority woman.

Respondents also indicated the pedagogical and curricular strategies used in classes. Traditional strategies including exams (92%), lectures (85%) and problem sets (84%) were used in almost all classes. Discussion or discussion boards (56%), group activities (43%) and an individual research project (41%) were also quite common. There are a few notable differences across institution types. For example, women's college classes were the most likely to report using peer instruction (65%), MSI women's college classes were the most likely to use group activities (83%), and MSI co-ed college classes were the most likely to use games/simulations (41%).

In terms of heterodox theoretical perspectives, feminist theory and queer theory were both more likely at women's colleges than co-ed institutions (for instance, 26% of women's college classes used feminist theories versus 2% of co-ed institutions). Across institution types, 18% of classes include anti-racist theory and 9% of classes include post-colonial theory and, interestingly, these shares are higher at PWIs than MSIs, driven mostly by the fact that none of the co-ed MSI classes report using any heterodox theories.

Table 4. Descriptive statistics on classes, by MSI and women's college status

	PWI co-ed	MSI co-ed	PWI women's	MSI women's	All PWI	All MSI	All co-ed	All women's	Total
Class format									
In-person	85	51	99	75	90	57	71	93	78
Hybrid (part online, part in-person)	0	4	0	12	0	6	2	3	2
Online asynchronous	15	45	0	13	9	37	28	3	19
Other	0	0	1	0	0	0	0	1	0
Class level									
Introductory/lower-level	65	76	45	44	57	68	70	45	61
Intermediate	15	22	28	24	20	22	18	27	21
Upper-level	20	2	27	32	23	10	12	29	18
Woman and/or underrepresented minority speaker									
A non-underrepresented minority female speaker	0	0	24	3	10	1	0	18	6
An underrepresented minority male speaker	4	10	0	0	3	7	7	0	4
An underrepresented minority and female speaker	3	0	21	50	10	13	2	28	11
Learning strategies (multiple responses possible)									
Service learning	4	10	0	0	3	8	7	0	4
Polling of students using apps or clickers	7	0	8	0	7	0	4	6	5
Flipped classroom	14	0	16	19	15	5	8	17	11
Peer instruction	8	20	68	55	32	29	13	65	31
Group activities	41	38	36	83	39	50	40	49	43
Lecture	79	80	93	100	85	85	79	95	85
Games/simulations	20	41	27	26	23	37	29	27	28
Discussion or discussion boards	68	62	31	58	53	61	65	38	56
Exams/quizzes	89	100	95	73	91	93	93	89	92
Problem sets	83	98	72	78	78	93	89	74	84
Individual research project	49	32	37	44	44	35	42	39	41
Other	16	12	30	24	22	15	15	28	19
Theoretical perspectives (multiple responses possible)									
Feminist theory	3	0	18	49	9	13	2	26	10
Queer theory	0	0	2	16	1	4	0	6	2
Post-colonial theory	10	0	9	27	10	7	6	14	9
Anti-racist theory	22	0	18	49	21	13	13	26	18
Total	100	100	100	100	100	100	100	100	100
N	30	28	29	18	59	46	58	47	105

Source: Authors' calculations based on RBG surveys

Table 5 provides descriptive statistics on students in our sample by institution type and Table 6 examines the same variables by student's own racial and gender identity (regardless of the type of institution they attend). It is important to remember that since we oversample identity-focused institutions, our sample is not intended to be nationally representative. A strength of our research design is that we are able to oversample underrepresented groups in economics. In our sample, 48% of students are female and 58% are minority-identifying. The gender and racial representation for the PWI co-ed institutions is more similar to national averages in economics. At those institutions 67% of student respondents are male/non-binary and only 41% are minority-identifying. Predictably, women's colleges serve mostly female students (91%) and MSIs are more racially diverse than PWIs.

We sampled 467 female students and 320 male or non-binary students. Just over half (52%) of the female respondents attend a women's college while the remaining 48% attend a co-educational institution. We sampled 425 minority students and 345 non-minority students. Half (51%) of minority-identifying students attend MSIs. Students could select more than one racial identity (8% did so) so the non-minority-identifying category is students who selected white (non-Hispanic) alone. Within the minority student sample 45% identify as Black/African American, 38% identify as Asian/Native Hawaiian/Pacific Islander, 16% identify as Hispanic and 1% identify as Indigenous/American Indian/Alaskan Native.

Aside from race and gender, students are relatively similar across institution types. There are more associate degree students in the MSI sample. Students at PWIs are more likely to be from higher-income households, whereas MSIs have larger shares of students from low- and middle-income households. For example, just over half of students at PWIs (53% overall, 56% at co-ed PWIs and 46% at women's college PWIs) have household incomes of $100,000 or higher compared to less than a quarter of MSI students (23% overall and for both women's college MSIs and co-ed MSIs).

Students' prior experience with economics is similar across institution types. For 54% of students this is their first college course in economics although 72% report some prior knowledge of economics either through relevant work experience or a high school course. About a quarter of the sample (23%) took an AP high school economics course and 25% took a non-AP high school economics course. Notably, students at MSIs were less likely to have had an AP economics course than their PWI peers. There were also some differences in student majors across institution type. Note that students can choose more than one major to allow for double majoring and recall that students are only surveyed if they are taking an economics course with one of the sampled faculty members. About half of the students in economics classes are majoring in economics. Students in economics classes at MSIs are less likely to be economics majors (27%) and more likely to be business majors (60%) than at PWIs. Students in economics classes at both MSIs and women's colleges were less likely to be math majors relative to their peers at PWIs and co-ed institutions.

Comparing female respondents to male or non-binary respondents, there are no substantial differences in age, year in school, degree type, college type (two- year vs four year) or family income. Female respondents in our sample are less likely to identify as Black/African American and more likely to identify as Asian/Native Hawaiian/Pacific Islander than are male or non-binary respondents. Female respondents are slightly less likely to report that this is their first economics course (51% versus 58% for male/non-binary students) but also less likely to have had knowledge of economics before college (65% versus 81% for male/non-binary students). Lastly, female students are less likely to be business majors (28% versus 43% for male/non-binary students) but more likely to be other social science majors (22% vs. 10% for male/non-binary students) than male and non-binary students.

Comparing minority-identifying respondents to white (only) respondents, there are no substantial differences in gender identity, age, year in school, degree type or college type (two-year versus four-year). Minority students are more likely than white students to report household incomes below $100K and conversely white students are more likely to report household incomes above $100K. Minority students are more likely to report that this is their first economics course (57% versus 50% for white students) and are less likely to have had knowledge of economics before college (70% versus 80%). Lastly, minority students are more likely to be business majors (40% versus 31% for white students) but less likely to be economics or math majors than white students.

Table 5. Descriptive statistics on students, by MSI and women's college status

	PWI co-ed	MSI co-ed	PWI women's	MSI women's	All PWI	All MSI	All co-ed	All women's	Total
Gender									
Male/non-binary	67	70	11	1	48	58	69	9	52
Female	33	30	89	99	52	42	31	91	48
Race/ethnicity (multiple responses possible)									
Black/African American	11	44	7	68	10	48	26	24	25
Asian/Native Hawaiian/Pacific Islander	18	19	38	8	24	17	18	30	22
Hispanic	9	6	14	7	11	6	8	12	9
Indigenous/American Indian/Alaskan Native	0	1	1	1	0	1	1	1	1
White (non-Hispanic)	66	34	46	23	59	32	51	40	48
Age									
18	19	16	30	11	23	15	17	25	19
19	19	23	21	26	20	23	21	23	21
20	25	19	24	33	25	22	22	27	24
21	21	16	17	18	20	16	19	18	18
22	9	2	5	2	8	2	6	4	5
23	5	2	0	1	3	2	3	0	2
24+	3	23	2	8	3	20	12	4	10
Year in college									
First year/Freshman	34	17	34	11	34	16	26	28	27
Second year/Sophomore	19	34	28	29	22	33	26	29	27
Third year/Junior	22	31	21	37	22	32	26	25	26
Fourth year/Senior	24	18	17	23	22	19	21	18	20
Annual household income									
Less than $30,000	10	21	13	20	11	20	15	15	15
$30,000-49,999	5	20	11	9	7	18	12	10	12
$50,000-99,999	9	19	18	25	12	20	14	20	15
$100,000-249,999	26	14	28	17	27	15	21	25	22
$250,000 or more	30	9	18	6	26	8	20	14	18
Prefer not to say	20	18	13	23	17	19	19	15	18
College type									
Two-year	11	34	0	0	7	28	21	0	15
Four-year	89	66	100	100	93	72	79	100	85
Degree in pursuit of									
Certificate	2	2	1	0	2	1	2	1	2
Associate's	7	17	1	1	5	14	12	1	9

	PWI co-ed	MSI co-ed	PWI women's	MSI women's	All PWI	All MSI	All co-ed	All women's	Total
Bachelor's	90	81	99	99	93	84	86	99	90
First economics course at current college	46	65	56	43	50	61	55	53	54
Knowledge of economics before college	73	75	71	53	73	72	74	66	72
Economics work experience before college	20	12	21	13	20	13	17	19	17
Took economics courses before college	55	51	63	59	58	52	53	62	56
Semesters of econ. coursework before college									
None	45	49	37	41	42	48	47	38	44
One semester	15	28	32	35	21	29	21	33	24
Two semesters	31	13	12	16	25	13	23	13	20
Three or more semesters	6	3	11	1	7	3	4	8	5
Half-semester or less	4	7	8	7	5	7	5	8	6
Prior economics experience (multiple responses possible)									
High school AP	32	12	29	13	31	12	23	24	23
Other high school course	20	25	30	37	24	27	22	32	25
Other college/university	4	15	4	2	4	13	9	3	8
Other prior economics experience	0	1	1	1	1	1	1	1	1
College course during high school	3	4	5	7	4	4	3	6	4
Major (multiple responses possible)									
Business	18	67	17	29	18	60	40	20	35
Economics	66	20	56	60	63	27	46	57	49
Math	37	9	17	5	31	8	25	14	22
Other social science	17	5	30	18	21	7	11	27	15
Other	29	23	42	28	33	24	26	38	29
Total	100	100	100	100	100	100	100	100	100
N	217	217	219	152	436	369	434	371	805

Source: Authors' calculations based on RBG surveys

Table 6. Descriptive statistics on students, by minority and gender identities

	Male/non-binary	Female	Not minority identifying	Minority identifying	Total
Gender					
Male/non-binary	100	0	54	50	52
Female	0	100	46	50	48
Race/ethnicity (multiple responses possible)					
Black/African American	32	20	0	45	25
Asian/Native Hawaiian/Pacific Islander	16	28	0	38	22
Hispanic	9	10	0	16	9
Indigenous/American Indian/Alaskan Native	0	1	0	1	1
White (non-Hispanic)	51	46	100	12	48
MSI vs. PWI					
PWI	54	64	73	49	59
MSI	46	36	27	51	41
Women's vs. Co-ed					
Co-ed	96	48	79	68	73
Women's college	4	52	21	32	27
Age					
18	19	20	15	22	19
19	21	20	23	20	21
20	26	22	26	22	24
21	15	23	16	21	19
22	6	5	7	4	5
23	3	2	4	2	3
24+	10	9	10	10	10
Year in college					
First year/Freshman	28	25	25	28	27
Second year/Sophomore	27	27	27	26	27
Third year/Junior	24	28	26	26	26
Fourth year/Senior	20	20	22	19	20
Annual household income					
Less than $30,000	16	14	8	22	15
$30,000-49,999	12	11	6	16	12
$50,000-99,999	12	19	11	18	15
$100,000-249,999	21	23	29	17	22
$250,000 or more	22	16	31	9	19
Prefer not to say	17	17	15	19	17
College type					
Two-year	16	14	14	16	15
Four-year	84	86	86	84	85
Degree in pursuit of					
Certificate	2	1	2	2	2
Associate's	10	8	9	9	9
Bachelor's	88	91	90	89	90
First economics course at current college	58	51	50	57	54
Knowledge of economics before college	81	65	80	70	72
Economics work experience before college	18	16	18	17	17
Took economics courses before college	57	56	63	53	56
Semesters of econ. coursework before college					
None	43	44	37	47	43

	Male/non-binary	Female	Not minority identifying	Minority identifying	Total
One semester	24	25	27	24	25
Two semesters	22	19	26	17	21
Three or more semesters	6	6	7	5	6
Half-semester or less	5	6	4	7	6
Prior economics experience (multiple responses possible)					
High school AP	22	26	28	21	23
Other high school course	28	24	27	25	25
Other college/university	10	5	9	7	8
Other prior economics experience	1	0	0	1	1
College course during high school	4	4	4	5	4
Major (multiple responses possible)					
Business	43	28	31	40	35
Economics	48	52	54	48	49
Math	24	20	27	19	22
Other social science	10	22	17	15	15
Other	27	34	29	30	29
Total	100	100	100	100	100
N	320	467	345	425	779

Source: Authors' calculations based on RBG surveys

4.2 Differences in RBG by identity and institution

Tables 7 and 8 provide means and differences for our key RBG outcomes, first by student's minority and gender identities (regardless of institution type) and then broken out by institution type (regardless of student identity). The outcomes include six specific items related to relevance and a standardized relevance factor that was generated through principal factor analysis summarizing those items, eight specific items related to belonging, plus a yes/no question on "Do you feel different from the typical economics student?," and a standardized belonging factor summarizing them, three specific items related to economics growth mindset, and a standardized factor summarizing them, as well as other growth mindset items (not used in the factors, e.g. writing growth mindset), and an overall RBG factor that summarizes all of the individual items in the relevance, belonging, and growth mindset factors.

The overall RBG factor was similar across gender identities and across women's colleges and co-educational institutions. Minority students, however, had a significantly lower overall RBG score (by 0.22 standard deviations) although there was not a statistically significant difference across MSIs and PWIs. The minority student RBG difference was broad-based, resulting from significant disparities in all three RBG factors.

Scores for the relevance factor were significantly higher for female students than for male/nonbinary students (by 0.15 standard deviations). This gender difference is in part result of many of the female students in our sample attending women's colleges since we see in Table 8 that women's colleges score significantly higher on relevance (by 0.25 standard deviations) than co-ed institutions. In co-ed institutions relevance is only an insignificant 0.06 standard deviations higher for female students (not shown). The specific questions with significant differences driving the results are that women overall and students at women's colleges were more likely to report that professors used examples relatable to their lives, that they discussed important real

world issues in class, and they felt economics provided a useful framework for thinking about important issues.

Relevance was significantly lower for students that identified as minorities than those that did not (by 0.17 standard deviations), but we see no significant difference between MSIs and PWIs. Minority students were significantly less likely to report that the textbook was easy to understand, that they discussed important real world issues in class, and that economics provided a useful framework for thinking about important issues. They were significantly more likely to report that their classes miss important aspects of issues at hand. Conversely at MSIs students were significantly *more* likely to report that textbook examples were relatable and *less* likely (although not statistically significant) to report that they miss important aspects of issues at hand, pointing to some important differences at PWIs vs MSIs. However, students at MSIs were significantly less likely to report that they discuss important real world issues in class, as well as that economics was a useful framework for thinking about important issues, similar to the patterns for minority students.

There were also significantly lower scores for the belonging factor for minority students (by 0.20 standard deviations). This result was driven by a number of items, including a significant difference in belief that they have the resources they need to reach their potential in the course. Additionally, they are significantly less likely to feel comfortable asking questions in class. Minority students are less likely to respond that "people like me can become economists" and more likely to feel different than the typical economics student. Interestingly, there is no difference in the belonging factor between PWIs and MSIs and students at MSIs are significantly *more* likely to report that their course is welcoming and significantly *less* likely to feel different from the typical economist. Students at MSIs, however, feel significantly less connected with professors, reporting lower scores on questions about if the professor cares as well as significantly less comfort in asking questions during office hours.

For the belonging factor, there were no significant differences based on gender, although responses on two individual outcomes differed significantly across genders and indicated a lowered sense of belonging for women as well. Specifically, women were less likely to report that "people like me can be economists" and more likely to report that they feel different from the typical economics student. Students at women's colleges had mixed results on belonging. They were significantly more likely to report feeling different than the typical economics student – but were also significantly more likely to report they feel supported by the tutor or teaching assistant for the class.

The growth mindset factor is significantly lower for minority-identifying students, driven by significant differences in students' belief that they can learn the material and feeling that the professor believes they can learn the material. The latter item is also significantly lower at MSIs than PWIs. Women also have significantly lower belief that they can learn the material and a significantly lower score on the economics growth mindset item, but no difference with men/non-binary students in their perception of the professor's belief in their ability. Interestingly, despite women overall having a lower economics growth mindset, women's colleges were significantly higher than co-educational institutions on the economics growth mindset question, pointing to a potentially important difference for female students in different institutional settings.

Table 7. Means and differences in RBG outcomes, by minority and gender identities

	Gender				Minority			
	Male/non-binary	Female	Difference: Female-Male/non-binary	Total	Not minority-identifying	Minority identifying	Difference: Minority-not	Total
Overall RBG factor	0.00	-0.01	-0.01	0.00	0.14	-0.08	-0.22**	0.01
Relevance factor	-0.08	0.07	0.15*	0.00	0.11	-0.06	-0.17*	0.01
Relevance factor items								
The textbook is easy to understand	4.69	4.69	0.00	4.69	4.82	4.59	-0.23*	4.68
Textbook examples were relatable to my life	4.91	5.00	0.09	4.95	5.00	4.94	-0.06	4.97
Professor uses examples relatable to my life	5.38	5.57	0.19*	5.47	5.56	5.43	-0.13	5.49
We discuss important real world issues in class	5.67	5.89	0.22*	5.77	5.96	5.67	-0.29**	5.79
Useful framework for thinking about important issues	5.76	5.98	0.22**	5.86	5.99	5.81	-0.18*	5.89
We miss important aspects of the issues we study in [course]	3.83	3.89	0.06	3.86	3.66	3.92	0.26*	3.81
Belonging factor	0.03	-0.03	-0.06	0.00	0.13	-0.07	-0.20**	0.01
Belonging factor items								
My class environment is welcoming	5.52	5.35	-0.17	5.44	5.54	5.38	-0.16	5.45
I feel comfortable asking questions in class	5.69	5.53	-0.16	5.62	5.76	5.55	-0.21*	5.64
I feel the professor cares about whether I was learning the material	5.90	5.91	0.01	5.90	5.94	5.89	-0.05	5.91
I feel that students support each other	5.46	5.35	-0.11	5.41	5.46	5.37	-0.09	5.41
I feel supported by the tutor or teaching assistant	5.20	5.37	0.17	5.28	5.33	5.24	-0.09	5.28
I feel comfortable asking questions during my professor's office hours	5.77	5.92	0.15	5.84	5.94	5.79	-0.15	5.85
I have access to the resources I need to reach my potential in this course	5.81	5.72	-0.09	5.77	5.97	5.63	-0.34***	5.77
People like me can become economists	5.93	5.71	-0.22*	5.83	6.04	5.71	-0.33***	5.85
Feel different from the typical economics student	0.23	0.36	0.13***	0.29	0.23	0.35	0.12**	0.30
Growth mindset factor	0.05	-0.06	-0.11	0.00	0.13	-0.07	-0.20**	0.01
Growth mindset factor items								
I believe I can learn the material	6.08	5.88	-0.20**	5.98	6.16	5.88	-0.28***	6.00
I feel the professor believes I can learn the material	6.04	6.06	0.02	6.05	6.19	5.98	-0.21**	6.07
Economics growth mindset	7.89	7.59	-0.30*	7.75	7.70	7.84	0.14	7.78
Other growth mindset items (not used in factors)								
Math growth mindset	7.24	7.30	0.06	7.27	7.17	7.43	0.26	7.32
Business growth mindset	7.95	7.62	-0.33*	7.79	7.79	7.83	0.04	7.81
Writing growth mindset	7.99	7.75	-0.24	7.88	7.89	7.91	0.02	7.90
Intelligence growth mindset	6.99	7.15	0.16	7.07	6.75	7.30	0.55**	7.07

Notes: *p<0.05; **p<0.01; ***p<0.001
Source: Authors' calculations based on RBG surveys

Table 8. Means and differences in student RBG outcomes, by MSI and women's college status

	MSI vs. PWI				Women's vs. Co-ed			
	PWI	MSI	Difference: MSI-PWI	Total	Co-ed	Women's	Difference: Women's-co-ed	Total
Overall RBG factor	0.04	-0.05	-0.09	0.00	-0.03	0.08	0.11	0.00
Relevance factor	0.02	-0.03	-0.05	0.00	-0.07	0.18	0.25**	0.00
Relevance factor items								
The textbook is easy to understand	4.70	4.67	-0.03	4.68	4.69	4.66	-0.03	4.68
Textbook examples were relatable to my life	4.86	5.09	0.23*	4.95	4.93	5.02	0.09	4.95
Professor uses examples relatable to my life	5.50	5.45	-0.05	5.48	5.36	5.81	0.45***	5.48
We discuss important real world issues in class	5.88	5.64	-0.24*	5.78	5.70	6.02	0.32**	5.78
Useful framework for thinking about important issues	5.94	5.75	-0.19*	5.86	5.77	6.10	0.33***	5.86
We miss important aspects of the issues we study in [course]	3.93	3.76	-0.17	3.86	3.87	3.82	-0.05	3.86
Belonging factor	0.01	-0.02	-0.03	0.00	-0.02	0.04	0.06	0.00
Belonging factor items								
My class environment is welcoming	5.32	5.62	0.30**	5.44	5.40	5.53	0.13	5.44
I feel comfortable asking questions in class	5.60	5.65	0.05	5.62	5.61	5.65	0.04	5.62
I feel the professor cares about whether I was learning the material	5.99	5.76	-0.23**	5.90	5.88	5.93	0.05	5.90
I feel that students support each other	5.38	5.42	0.04	5.40	5.41	5.35	-0.06	5.40
I feel supported by the tutor or teaching assistant	5.35	5.16	-0.19	5.27	5.18	5.53	0.35**	5.27
I feel comfortable asking questions during my professor's office hours	5.92	5.73	-0.19*	5.84	5.81	5.94	0.13	5.84
I have access to the resources I need to reach my potential in this course	5.78	5.75	-0.03	5.76	5.76	5.78	0.02	5.76
People like me can become economists	5.91	5.72	-0.19*	5.83	5.84	5.81	-0.03	5.83
Feel different from the typical economics student	0.35	0.21	-0.14***	0.29	0.25	0.39	0.14***	0.29
Growth mindset factor	0.06	-0.09	-0.15**	0.00	0.01	-0.02	-0.03	0.00
Growth mindset factor items								
I believe I can learn the material	6.05	5.90	-0.15	5.99	6.03	5.88	-0.15	5.99
I feel the professor believes I can learn the material	6.14	5.92	-0.22**	6.05	6.05	6.06	0.01	6.05
Economics growth mindset	7.79	7.72	-0.07	7.76	7.65	8.07	0.42**	7.76
Other growth mindset items (not used in factors)								
Math growth mindset	7.18	7.43	0.25	7.28	7.14	7.67	0.53**	7.28
Business growth mindset	7.79	7.84	0.05	7.81	7.76	7.92	0.16	7.81
Writing growth mindset	7.77	8.05	0.28	7.88	7.86	7.95	0.09	7.88
Intelligence growth mindset	6.68	7.64	0.96***	7.07	6.98	7.28	0.30	7.07

Source: Authors' calculations based on RBG surveys
Notes: *p<0.05; **p<0.01; ***p<0.001

4.3 Multivariate regression models

Table 9-Table 15 (main effects) and Table 16-Table 22 (with a female and minority-identifying interaction term) present results from linear regressions in which the dependent variables are each of the three RBG constructs, plus an overall RBG factor and the survey items "We discuss important, real world issues in this class," "People like me can become economists" and "I feel the professor believes I can learn the material" (because these items had the largest difference in means). Regressions using the pooled sample, and for subsets of only students attending women's colleges, co-ed institutions, MSIs and PWIs are shown separately. We present a specification without controls (spec. 1) and then with controls (spec. 2).

The main result in relation to H2 is that minority-identifying students experience lower RBG than their white peers. This result, however, is sensitive to the inclusion of covariates. The lower overall RBG result is strongest for minority students in co-educational institutions. Breaking down RBG into the three components, we see a slightly more nuanced result. Minority-identifying students in the pooled model and co-educational settings experience significantly lower belonging and growth mindset, however, minority-identifying students at women's colleges experience significantly lower relevance (only this last result remains significant in spec. 2). The results for gender and minority-identity become generally insignificant in the factor models with interactions. At women's colleges, there is a significant negative female and minority interaction for growth mindset, but the main effect of minority-identifying is a large (but insignificant) positive.

While female-identifying students do not experience lower RBG overall in either the pooled sample or the institution-specific subsamples, we do see that women are less likely to agree that "people like me can become economists" (significant in the pooled model, both specifications) and this result is strongest at co-educational institutions (although insignificant in spec. 2). There is also a significant negative coefficient on minority-identifying in spec. 1 for the pooled and co-ed models, and in spec. 2 for the MSI model for this outcome. When we add the interaction of race and gender we see some evidence that this result is stronger for minority-identifying women at women's colleges, although there is again a positive and significant main effect of minority-identifying.

Minority-identifying students have a significantly lower response to the "we discuss important real world issues in class" outcome, in spec. 1, for the pooled model and at women's colleges. In the interacted model, the main effect for female students at women's colleges is significant indicating that women are less likely to agree that the class covers important real world issues. Likewise, in spec. 1, for the pooled and women's colleges models, minority-identifying students are significantly less likely to agree with this statement. None of the covariates of interest is statistically significant for any of the "I feel the professor believes I can learn the material" models.

Across all models, the covariate with the most consistent statistical significance is household income in excess of $250,000. High household income is associated with significantly higher RBG overall in both the pooled sample and at MSIs and women's colleges, with similar results for the belonging and growth mindset dimensions. Household income above $250,000 is also associated with a significantly higher likelihood of believing that "people like me can become economists" at MSIs and with a significantly higher belief that "the professor believes I can learn this material" at all types of institutions except for women's colleges. We also see significant results for degree types with a pattern that suggest that students who are pursuing

certificates (the omitted category) have lower RBG across a number of measures relative to students pursuing either associate's or bachelor's degrees.

While many of the differences by race and gender are no longer significant when controls are included, it is important to note that negative coefficients usually remain so, although sometimes reduced in magnitude, while standard errors increase. This pattern suggests that there may be differences that we are underpowered to detect. Additionally, one should be careful not to compare coefficients across institution types since the omitted group is substantially different. For example, students who are not female-identifying at a women's college are a significantly different comparison group than students who are not female-identifying at a co-educational institution.

Table 9. RBG factor OLS models, pooled and by MSI and women's college status (Testing H1 and H2)

	RBG									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.019	0.008	-0.053	-0.030	0.029	0.046	-0.122	-0.075	-0.082	-0.177
	(0.105)	(0.103)	(0.162)	(0.147)	(0.140)	(0.176)	(0.126)	(0.129)	(0.141)	(0.237)
Minority-identifying (no omit.)										
Minority-identifying	-0.223*	-0.087	-0.243	-0.164	-0.148	-0.038	-0.274*	-0.093	-0.142	-0.120
	(0.103)	(0.115)	(0.162)	(0.157)	(0.139)	(0.148)	(0.130)	(0.145)	(0.146)	(0.160)
Age		-0.031		0.101		-0.014		-0.034		0.007
		(0.055)		(0.123)		(0.060)		(0.067)		(0.097)
Age # Age		0.001		-0.002		0.001		0.001		0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.054		-0.067		0.059		0.059		0.026
		(0.292)		(0.492)		(0.229)		(0.320)		(0.222)
Household income (less than 30000 omit.)										
$30000-49999		0.016		0.234		-0.094		-0.150		0.428
		(0.194)		(0.313)		(0.222)		(0.226)		(0.317)
$50000-99999		0.070		0.191		0.016		-0.063		0.371*
		(0.187)		(0.301)		(0.226)		(0.261)		(0.177)
$100000-249999		0.135		0.189		0.148		0.157		0.151
		(0.178)		(0.284)		(0.201)		(0.239)		(0.179)
$250000 or more		0.416*		0.408		0.663*		0.422		0.461*
		(0.184)		(0.268)		(0.312)		(0.248)		(0.180)
Prefer not to say		-0.259		-0.388		-0.081		-0.379		0.162
		(0.219)		(0.382)		(0.210)		(0.290)		(0.181)
Degree in pursuit of (certificate omit.)										
Associate's		0.248		0.115		0.699**		0.208		0.200
		(0.352)		(0.450)		(0.234)		(0.339)		(0.451)
Bachelor's		-0.071		-0.439		0.536*		-0.095		-0.011
		(0.295)		(0.323)		(0.247)		(0.312)		(0.250)
Two-year college		-0.517		-0.824		-0.461		-0.471		
		(0.368)		(0.937)		(0.681)		(0.537)		
State (State 4 omit.)										
State 1		0.165		0.115		0.221		0.219		
		(0.193)		(0.551)		(0.298)		(0.248)		
State 2		-0.176		0.057				-0.159		-0.176
		(0.181)		(0.282)				(0.296)		(0.639)
State 3		0.078		0.174		-0.099		0.090		-0.052
		(0.204)		(0.495)		(0.203)		(0.536)		(0.314)
Pell recipients (%)		-0.005		-0.005		-0.010		-0.002		0.003
		(0.005)		(0.017)		(0.012)		(0.006)		(0.011)
Student-faculty ratio		0.029		0.059		0.017		0.034		-0.044
		(0.031)		(0.090)		(0.059)		(0.042)		(0.126)
Percent admitted		-0.004		-0.000		-0.003		-0.005		-0.003
		(0.003)		(0.006)		(0.004)		(0.009)		(0.009)
Constant	0.148	0.406	0.192	-1.138	0.048	-0.169	0.172	0.392	0.251**	0.457
	(0.079)	(0.865)	(0.106)	(1.833)	(0.126)	(1.040)	(0.088)	(1.110)	(0.080)	(2.002)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.013	0.092	0.019	0.110	0.004	0.140	0.020	0.121	0.009	0.055
Adjusted R-squared	0.011	0.069	0.014	0.066	-0.001	0.094	0.015	0.079	0.004	0.006

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 10. Relevance factor OLS models, pooled and by MSI and women's college status (Testing H1 and H2)

	Relevance									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	0.141	0.159	0.147	0.121	0.141	0.103	0.028	0.028	0.081	-0.158
	(0.101)	(0.100)	(0.157)	(0.136)	(0.128)	(0.164)	(0.115)	(0.123)	(0.109)	(0.181)
Minority-identifying (no omit.)										
Minority-identifying	-0.168	-0.109	-0.186	-0.193	-0.152	-0.009	-0.174	-0.086	-0.241*	-0.248*
	(0.095)	(0.100)	(0.158)	(0.136)	(0.127)	(0.134)	(0.122)	(0.128)	(0.109)	(0.105)
Age		-0.084		0.024		-0.047		-0.074		-0.009
		(0.052)		(0.112)		(0.059)		(0.063)		(0.093)
Age # Age		0.002*		-0.001		0.001		0.002		0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.047		0.079		-0.048		0.058		-0.019
		(0.278)		(0.490)		(0.198)		(0.312)		(0.221)
Household income (less than 30000 omit.)										
$30000-49999		-0.082		-0.072		-0.048		-0.156		0.008
		(0.180)		(0.282)		(0.211)		(0.221)		(0.252)
$50000-99999		-0.013		-0.017		0.036		-0.064		0.080
		(0.184)		(0.306)		(0.214)		(0.257)		(0.162)
$100000-249999		-0.081		-0.175		0.045		0.013		-0.292
		(0.168)		(0.280)		(0.186)		(0.217)		(0.222)
$250000 or more		0.128		0.014		0.385		0.141		0.184
		(0.172)		(0.259)		(0.314)		(0.225)		(0.173)
Prefer not to say		-0.271		-0.584		0.099		-0.314		-0.042
		(0.216)		(0.382)		(0.176)		(0.287)		(0.175)
Degree in pursuit of (certificate omit.)										
Associate's		0.096		0.151		0.453		0.048		0.126
		(0.317)		(0.387)		(0.278)		(0.288)		(0.331)
Bachelor's		-0.054		-0.339		0.383		-0.108		0.029
		(0.222)		(0.227)		(0.289)		(0.239)		(0.195)
Two-year college		-0.431		-1.756*		-0.018		-0.403		
		(0.351)		(0.762)		(0.617)		(0.545)		
State (State 4 omit.)										
State 1		0.098		-0.410		0.152		0.179		
		(0.190)		(0.573)		(0.267)		(0.256)		
State 2		-0.034		0.218				0.037		-0.832
		(0.194)		(0.318)				(0.317)		(0.658)
State 3		0.003		-0.108		-0.123		-0.031		-0.405
		(0.208)		(0.507)		(0.185)		(0.611)		(0.326)
Pell recipients (%)		-0.004		0.012		-0.007		-0.001		0.000
		(0.004)		(0.016)		(0.011)		(0.006)		(0.009)
Student-faculty ratio		0.043		0.073		0.010		0.051		-0.170
		(0.029)		(0.088)		(0.055)		(0.041)		(0.133)
Percent admitted		-0.004		0.000		-0.004		-0.005		-0.012
		(0.003)		(0.007)		(0.004)		(0.010)		(0.008)
Constant	0.036	0.975	0.034	-0.611	0.036	0.431	0.029	0.664	0.268***	3.158
	(0.072)	(0.820)	(0.100)	(1.657)	(0.112)	(1.025)	(0.079)	(1.053)	(0.080)	(2.509)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.014	0.063	0.017	0.100	0.011	0.107	0.009	0.074	0.023	0.114
Adjusted R-squared	0.012	0.040	0.012	0.056	0.006	0.060	0.004	0.029	0.017	0.068

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 11. Belonging factor OLS models, pooled and by MSI and women's college status (Testing H1 and H2)

	Belonging									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.078	-0.041	-0.136	-0.093	0.008	0.019	-0.168	-0.110	-0.146	-0.189
	(0.101)	(0.098)	(0.153)	(0.145)	(0.135)	(0.169)	(0.126)	(0.126)	(0.140)	(0.232)
Minority-identifying (no omit.)										
Minority-identifying	-0.200*	-0.067	-0.218	-0.132	-0.136	-0.058	-0.272*	-0.100	-0.035	-0.021
	(0.100)	(0.116)	(0.153)	(0.158)	(0.134)	(0.145)	(0.126)	(0.145)	(0.147)	(0.169)
Age		-0.001		0.132		0.003		-0.004		0.027
		(0.052)		(0.115)		(0.056)		(0.062)		(0.098)
Age # Age		0.000		-0.002		0.001		0.000		-0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.088		-0.090		0.146		0.089		0.077
		(0.252)		(0.424)		(0.210)		(0.274)		(0.246)
Household income (less than 30000 omit.)										
$30000-49999		0.019		0.237		-0.101		-0.152		0.476
		(0.180)		(0.295)		(0.209)		(0.203)		(0.333)
$50000-99999		0.034		0.179		-0.049		-0.132		0.414*
		(0.171)		(0.255)		(0.222)		(0.236)		(0.178)
$100000-249999		0.171		0.277		0.130		0.154		0.293
		(0.162)		(0.244)		(0.196)		(0.219)		(0.175)
$250000 or more		0.440*		0.461		0.666*		0.448		0.449*
		(0.175)		(0.237)		(0.292)		(0.233)		(0.187)
Prefer not to say		-0.257		-0.257		-0.217		-0.396		0.198
		(0.192)		(0.323)		(0.205)		(0.250)		(0.195)
Degree in pursuit of (certificate omit.)										
Associate's		0.022		-0.447		0.611***		-0.022		0.031
		(0.389)		(0.497)		(0.175)		(0.394)		(0.411)
Bachelor's		-0.285		-0.713		0.414*		-0.304		-0.199
		(0.361)		(0.374)		(0.199)		(0.383)		(0.238)
Two-year college		-0.409		-0.220		-0.473		-0.373		
		(0.337)		(0.940)		(0.601)		(0.456)		
State (State 4 omit.)										
State 1		0.179		0.224		0.218		0.239		
		(0.178)		(0.500)		(0.278)		(0.223)		
State 2		-0.223		0.030				-0.193		-0.045
		(0.182)		(0.280)				(0.286)		(0.633)
State 3		0.131		0.300		-0.045		0.175		0.032
		(0.184)		(0.435)		(0.194)		(0.429)		(0.319)
Pell recipients (%)		-0.004		-0.010		-0.012		-0.002		0.005
		(0.004)		(0.016)		(0.011)		(0.005)		(0.010)
Student-faculty ratio		0.019		0.048		0.012		0.027		0.014
		(0.029)		(0.081)		(0.052)		(0.038)		(0.127)
Percent admitted		-0.004		-0.000		-0.002		-0.005		-0.003
		(0.003)		(0.006)		(0.004)		(0.007)		(0.009)
Constant	0.163*	0.289	0.209*	-1.188	0.069	-0.053	0.202*	0.283	0.192*	-0.439
	(0.080)	(0.844)	(0.106)	(1.750)	(0.122)	(0.995)	(0.090)	(1.063)	(0.080)	(1.978)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.013	0.096	0.023	0.110	0.004	0.147	0.023	0.133	0.004	0.048
Adjusted R-squared	0.011	0.073	0.018	0.066	-0.002	0.102	0.019	0.091	-0.002	-0.001

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 12. Growth mindset factor OLS models, pooled and by MSI and women's college status (Testing H1 and H2)

	Growth mindset									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.098	-0.100	-0.107	-0.092	-0.102	-0.038	-0.147	-0.104	-0.111	-0.073
	(0.083)	(0.082)	(0.121)	(0.113)	(0.116)	(0.159)	(0.101)	(0.102)	(0.133)	(0.193)
Minority-identifying (no omit.)										
Minority-identifying	-0.182*	-0.056	-0.196	-0.098	-0.074	-0.020	-0.215*	-0.052	-0.118	-0.074
	(0.082)	(0.090)	(0.121)	(0.119)	(0.114)	(0.131)	(0.100)	(0.108)	(0.149)	(0.156)
Age		-0.009		0.056		0.003		-0.021		-0.040
		(0.047)		(0.106)		(0.052)		(0.058)		(0.090)
Age # Age		0.000		-0.001		0.000		0.001		0.001
		(0.001)		(0.002)		(0.001)		(0.001)		(0.001)
Age missing		-0.072		-0.170		-0.065		-0.084		0.004
		(0.213)		(0.318)		(0.205)		(0.233)		(0.176)
Household income (less than 30000 omit.)										
$30000-49999		0.095		0.371		-0.067		-0.045		0.499
		(0.177)		(0.289)		(0.194)		(0.205)		(0.318)
$50000-99999		0.165		0.309		0.072		0.079		0.373
		(0.153)		(0.262)		(0.168)		(0.197)		(0.231)
$100000-249999		0.196		0.289		0.170		0.202		0.242
		(0.157)		(0.256)		(0.168)		(0.196)		(0.241)
$250000 or more		0.367*		0.440		0.462		0.341		0.484*
		(0.166)		(0.251)		(0.244)		(0.209)		(0.243)
Prefer not to say		-0.055		-0.133		0.051		-0.145		0.218
		(0.178)		(0.303)		(0.176)		(0.228)		(0.216)
Degree in pursuit of (certificate omit.)										
Associate's		0.689**		1.143***		0.524		0.667*		0.505
		(0.266)		(0.339)		(0.597)		(0.283)		(0.420)
Bachelor's		0.390		0.390*		0.439		0.393		0.320
		(0.205)		(0.187)		(0.599)		(0.231)		(0.188)
Two-year college		-0.413		-0.130		-0.544		-0.340		
		(0.303)		(0.824)		(0.553)		(0.425)		
State (State 4 omit.)										
State 1		0.107		0.521		0.162		0.093		
		(0.152)		(0.435)		(0.242)		(0.188)		
State 2		-0.133		-0.097				-0.213		0.485
		(0.152)		(0.237)				(0.242)		(0.605)
State 3		0.041		0.257		-0.086		0.070		0.285
		(0.162)		(0.369)		(0.177)		(0.373)		(0.324)
Pell recipients (%)		-0.005		-0.016		-0.006		-0.004		-0.001
		(0.004)		(0.013)		(0.011)		(0.005)		(0.009)
Student-faculty ratio		0.012		0.019		0.020		0.010		0.037
		(0.026)		(0.064)		(0.048)		(0.034)		(0.130)
Percent admitted		-0.002		-0.000		0.000		-0.003		0.009
		(0.002)		(0.005)		(0.004)		(0.006)		(0.009)
Constant	0.159*	-0.241	0.217**	-0.785	0.015	-0.716	0.177*	0.032	0.171**	-1.088
	(0.065)	(0.736)	(0.084)	(1.629)	(0.104)	(1.051)	(0.073)	(0.943)	(0.063)	(1.957)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.017	0.092	0.024	0.125	0.005	0.112	0.022	0.117	0.009	0.058
Adjusted R-squared	0.014	0.068	0.019	0.082	-0.001	0.065	0.018	0.075	0.003	0.010

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 13. "We discuss important real world issues in class" OLS models, pooled and by MSI and women's college status (Testing H1 and H2)

	We discuss important real world issues in class									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	0.224	0.195	0.244	0.262	0.161	0.141	0.066	0.042	0.157	-0.365
	(0.138)	(0.134)	(0.208)	(0.188)	(0.192)	(0.248)	(0.157)	(0.169)	(0.175)	(0.198)
Minority-identifying (no omit.)										
Minority-identifying	-0.277*	-0.089	-0.243	-0.120	-0.258	-0.051	-0.292	-0.077	-0.354*	-0.266
	(0.133)	(0.148)	(0.207)	(0.192)	(0.176)	(0.212)	(0.169)	(0.191)	(0.156)	(0.151)
Age		-0.092		0.154		-0.093		-0.125		0.113
		(0.075)		(0.136)		(0.092)		(0.090)		(0.115)
Age # Age		0.002		-0.003		0.002		0.002		-0.002
		(0.001)		(0.003)		(0.001)		(0.001)		(0.002)
Age missing		-0.237		-0.346		-0.278		-0.234		-0.298
		(0.392)		(0.665)		(0.320)		(0.441)		(0.343)
Household income (less than 30000 omit.)										
$30000-49999		-0.098		-0.288		0.044		-0.305		0.200
		(0.259)		(0.312)		(0.358)		(0.327)		(0.324)
$50000-99999		-0.066		-0.169		0.086		-0.200		0.286
		(0.235)		(0.309)		(0.337)		(0.322)		(0.290)
$100000-249999		-0.221		-0.359		-0.074		-0.300		-0.025
		(0.235)		(0.320)		(0.320)		(0.306)		(0.320)
$250000 or more		0.059		-0.070		0.053		-0.078		0.492
		(0.238)		(0.297)		(0.477)		(0.305)		(0.294)
Prefer not to say		-0.249		-0.771		0.306		-0.374		0.133
		(0.296)		(0.462)		(0.293)		(0.384)		(0.327)
Degree in pursuit of (certificate omit.)										
Associate's		-0.359		-0.387		0.095		-0.441		0.339
		(0.417)		(0.660)		(0.242)		(0.375)		(0.591)
Bachelor's		-0.402		-0.742		0.167		-0.502		0.040
		(0.319)		(0.400)		(0.308)		(0.340)		(0.249)
Two-year college		-0.353		-1.170		-0.046		-0.065		
		(0.504)		(1.036)		(0.813)		(0.728)		
State (State 4 omit.)										
State 1		-0.016		-0.339		0.222		-0.111		
		(0.285)		(0.748)		(0.351)		(0.357)		
State 2		-0.261		-0.209				-0.650		0.215
		(0.234)		(0.369)				(0.357)		(0.746)
State 3		-0.249		-0.288		-0.373		-0.497		-0.436
		(0.299)		(0.637)		(0.297)		(0.798)		(0.366)
Pell recipients (%)		-0.015*		-0.004		-0.014		-0.012		0.020
		(0.007)		(0.020)		(0.014)		(0.009)		(0.013)
Student-faculty ratio		0.047		0.074		0.019		0.004		-0.227
		(0.038)		(0.113)		(0.067)		(0.054)		(0.152)
Percent admitted		-0.004		-0.003		-0.001		-0.002		0.002
		(0.005)		(0.007)		(0.007)		(0.014)		(0.012)
Constant	5.835***	7.792***	5.858***	4.896*	5.775***	7.058***	5.830***	8.992***	6.118***	6.164*
	(0.104)	(1.141)	(0.142)	(1.925)	(0.149)	(1.531)	(0.115)	(1.401)	(0.135)	(2.697)
N (Obs.)	754	754	405	405	349	349	410	410	344	344
R-squared	0.019	0.074	0.018	0.127	0.011	0.079	0.013	0.079	0.022	0.126
Adjusted R-squared	0.016	0.050	0.013	0.083	0.005	0.029	0.008	0.034	0.016	0.080

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 14. "People like me can become economists" OLS models, pooled and by MSI and women's college status (Testing H1 and H2)

	People like me can become economists									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.238*	-0.242*	-0.318	-0.266	-0.155	-0.174	-0.348*	-0.258	-0.250	-0.392
	(0.121)	(0.115)	(0.171)	(0.186)	(0.164)	(0.221)	(0.158)	(0.159)	(0.231)	(0.292)
Minority-identifying (no omit.)										
Minority-identifying	-0.308*	-0.259	-0.293	-0.194	-0.196	-0.399*	-0.378*	-0.208	-0.172	-0.347
	(0.122)	(0.155)	(0.171)	(0.213)	(0.158)	(0.179)	(0.150)	(0.183)	(0.231)	(0.257)
Age		-0.140*		-0.352*		-0.045		-0.126		-0.217
		(0.068)		(0.162)		(0.072)		(0.082)		(0.159)
Age # Age		0.002*		0.005		0.001		0.002		0.003
		(0.001)		(0.003)		(0.001)		(0.001)		(0.003)
Age missing		-0.268		-0.317		-0.135		-0.213		-0.491
		(0.296)		(0.481)		(0.275)		(0.329)		(0.580)
Household income (less than 30000 omit.)										
$30000-49999		0.100		0.384		-0.007		-0.083		0.503
		(0.225)		(0.374)		(0.252)		(0.246)		(0.447)
$50000-99999		0.108		0.028		0.142		0.018		0.277
		(0.199)		(0.340)		(0.219)		(0.259)		(0.292)
$100000-249999		0.069		0.080		0.007		0.124		-0.036
		(0.220)		(0.343)		(0.258)		(0.277)		(0.345)
$250000 or more		0.335		0.323		0.631*		0.431		0.116
		(0.240)		(0.360)		(0.293)		(0.281)		(0.451)
Prefer not to say		-0.434		-0.657		-0.250		-0.526		-0.129
		(0.235)		(0.396)		(0.247)		(0.289)		(0.337)
Degree in pursuit of (certificate omit.)										
Associate's		0.079		0.018		0.353		0.035		0.896
		(0.334)		(0.498)		(0.434)		(0.339)		(0.547)
Bachelor's		-0.242		-0.164		0.123		-0.274		0.465
		(0.272)		(0.318)		(0.456)		(0.281)		(0.324)
Two-year college		-0.233		1.377		-0.918		-0.218		
		(0.403)		(1.135)		(0.669)		(0.507)		
State (State 4 omit.)										
State 1		0.143		0.380		0.204		0.131		
		(0.225)		(0.696)		(0.316)		(0.262)		
State 2		-0.298		-0.506				-0.344		-1.524
		(0.261)		(0.439)				(0.403)		(0.976)
State 3		0.513*		0.290		0.829***		0.417		0.194
		(0.217)		(0.539)		(0.246)		(0.501)		(0.555)
Pell recipients (%)		-0.003		-0.018		-0.008		-0.000		-0.020
		(0.006)		(0.020)		(0.012)		(0.007)		(0.012)
Student-faculty ratio		0.016		-0.043		0.108		0.011		-0.171
		(0.036)		(0.091)		(0.063)		(0.051)		(0.205)
Percent admitted		-0.011**		-0.005		-0.016***		-0.010		-0.022
		(0.004)		(0.008)		(0.005)		(0.009)		(0.012)
Constant	6.136***	8.600***	6.237***	12.403***	5.924***	6.151***	6.175***	8.381***	6.146***	12.745***
	(0.107)	(1.026)	(0.140)	(2.473)	(0.141)	(1.407)	(0.123)	(1.281)	(0.147)	(3.122)
N (Obs.)	741	741	396	396	345	345	403	403	338	338
R-squared	0.028	0.130	0.040	0.160	0.009	0.163	0.040	0.156	0.012	0.129
Adjusted R-squared	0.025	0.107	0.035	0.118	0.003	0.117	0.035	0.114	0.006	0.082

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 15. "I feel the professor believes I can learn the material" OLS models, pooled and by MSI and women's college status (Testing H1 and H2)

	I feel the professor believes I can learn the material									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	0.006	-0.001	0.006	0.103	-0.030	0.123	-0.001	0.056	-0.020	0.029
	(0.105)	(0.097)	(0.152)	(0.157)	(0.138)	(0.164)	(0.139)	(0.130)	(0.165)	(0.338)
Minority-identifying (no omit.)										
Minority-identifying	-0.195	0.001	-0.193	-0.024	-0.071	-0.018	-0.180	0.063	-0.245	-0.141
	(0.106)	(0.114)	(0.151)	(0.153)	(0.131)	(0.150)	(0.130)	(0.141)	(0.172)	(0.175)
Age		0.008		0.168		-0.028		-0.021		0.042
		(0.056)		(0.123)		(0.065)		(0.068)		(0.121)
Age # Age		0.000		-0.003		0.001		0.001		-0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.064		-0.013		0.047		0.068		-0.001
		(0.233)		(0.374)		(0.225)		(0.256)		(0.179)
Household income (less than 30000 omit.)										
$30000-49999		0.264		0.690*		-0.029		0.086		0.712
		(0.212)		(0.341)		(0.236)		(0.250)		(0.377)
$50000-99999		0.359		0.511		0.284		0.312		0.485
		(0.191)		(0.333)		(0.198)		(0.236)		(0.327)
$100000-249999		0.325		0.449		0.294		0.269		0.505
		(0.197)		(0.327)		(0.205)		(0.245)		(0.325)
$250000 or more		0.649**		0.772*		0.605*		0.647*		0.654
		(0.218)		(0.335)		(0.292)		(0.270)		(0.338)
Prefer not to say		0.009		0.068		-0.051		-0.082		0.267
		(0.213)		(0.367)		(0.218)		(0.264)		(0.338)
Degree in pursuit of (certificate omit.)										
Associate's		0.653		0.827		1.118		0.702		0.424
		(0.496)		(0.507)		(0.803)		(0.527)		(0.488)
Bachelor's		0.221		-0.214		0.991		0.271		0.345
		(0.459)		(0.406)		(0.809)		(0.497)		(0.221)
Two-year college		-0.662		-0.794		-0.962		-0.646		
		(0.356)		(0.953)		(0.605)		(0.499)		
State (State 4 omit.)										
State 1		0.139		0.244		0.315		0.093		
		(0.174)		(0.475)		(0.269)		(0.221)		
State 2		-0.134		-0.320				-0.250		0.418
		(0.209)		(0.343)				(0.338)		(0.888)
State 3		-0.072		-0.248		-0.145		-0.071		0.070
		(0.187)		(0.439)		(0.213)		(0.432)		(0.445)
Pell recipients (%)		-0.005		-0.000		-0.004		-0.005		0.006
		(0.004)		(0.015)		(0.011)		(0.006)		(0.014)
Student-faculty ratio		0.008		0.023		0.034		0.005		-0.033
		(0.030)		(0.077)		(0.051)		(0.041)		(0.166)
Percent admitted		-0.000		-0.004		0.004		-0.001		0.011
		(0.003)		(0.006)		(0.005)		(0.007)		(0.011)
Constant	6.173***	5.566***	6.249***	4.065*	5.989***	4.593***	6.161***	6.077***	6.245***	4.135
	(0.089)	(0.942)	(0.116)	(1.799)	(0.116)	(1.311)	(0.101)	(1.167)	(0.102)	(2.532)
N (Obs.)	755	755	403	403	352	352	411	411	344	344
R-squared	0.010	0.106	0.010	0.124	0.001	0.143	0.008	0.131	0.016	0.077
Adjusted R-squared	0.007	0.083	0.006	0.081	-0.005	0.096	0.003	0.089	0.010	0.029

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 16. RBG factor OLS models, pooled and by MSI and women's college status (Testing H3)

	RBG									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.038	-0.005	-0.041	-0.002	-0.026	0.046	-0.058	-0.037	-0.074	-0.171
	(0.128)	(0.122)	(0.157)	(0.154)	(0.209)	(0.206)	(0.161)	(0.151)	(0.157)	(0.249)
Minority-identifying (no omit.)										
Minority-identifying	-0.239	-0.100	-0.230	-0.128	-0.182	-0.038	-0.232	-0.061	-0.077	-0.080
	(0.165)	(0.175)	(0.300)	(0.253)	(0.207)	(0.234)	(0.171)	(0.193)	(0.263)	(0.281)
Female # Minority-identifying	0.033	0.024	-0.025	-0.067	0.077	-0.001	-0.126	-0.083	-0.067	-0.041
	(0.202)	(0.196)	(0.334)	(0.290)	(0.274)	(0.288)	(0.250)	(0.254)	(0.304)	(0.313)
Age		-0.031		0.104		-0.014		-0.033		0.007
		(0.056)		(0.124)		(0.061)		(0.068)		(0.097)
Age # Age		0.001		-0.002		0.001		0.001		0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.056		-0.073		0.059		0.057		0.026
		(0.289)		(0.487)		(0.229)		(0.319)		(0.223)
Household income (less than 30000 omit.)										
$30000-49999		0.016		0.233		-0.094		-0.148		0.428
		(0.194)		(0.314)		(0.220)		(0.226)		(0.317)
$50000-99999		0.069		0.192		0.016		-0.057		0.372*
		(0.187)		(0.301)		(0.226)		(0.262)		(0.178)
$100000-249999		0.134		0.188		0.148		0.160		0.152
		(0.178)		(0.285)		(0.201)		(0.240)		(0.180)
$250000 or more		0.415*		0.406		0.663*		0.425		0.462*
		(0.183)		(0.269)		(0.309)		(0.247)		(0.181)
Prefer not to say		-0.260		-0.390		-0.081		-0.375		0.163
		(0.220)		(0.382)		(0.209)		(0.293)		(0.182)
Degree in pursuit of (certificate omit.)										
Associate's		0.246		0.107		0.699**		0.217		0.196
		(0.354)		(0.442)		(0.234)		(0.337)		(0.454)
Bachelor's		-0.073		-0.431		0.536*		-0.090		-0.015
		(0.298)		(0.325)		(0.247)		(0.308)		(0.250)
Two-year college		-0.521		-0.865		-0.461		-0.462		
		(0.376)		(0.944)		(0.701)		(0.541)		
State (State 4 omit.)										
State 1		0.165		0.093		0.221		0.219		
		(0.194)		(0.555)		(0.303)		(0.248)		
State 2		-0.171		0.065				-0.165		-0.178
		(0.183)		(0.287)				(0.295)		(0.640)
State 3		0.080		0.165		-0.099		0.071		-0.052
		(0.204)		(0.495)		(0.204)		(0.538)		(0.314)
Pell recipients (%)		-0.005		-0.005		-0.010		-0.002		0.003
		(0.005)		(0.017)		(0.013)		(0.006)		(0.011)
Student-faculty ratio		0.029		0.061		0.017		0.033		-0.044
		(0.032)		(0.090)		(0.059)		(0.042)		(0.126)
Percent admitted		-0.004		-0.000		-0.003		-0.005		-0.003
		(0.003)		(0.006)		(0.005)		(0.009)		(0.009)
Constant	0.157	0.412	0.187	-1.231	0.074	-0.169	0.148	0.366	0.244**	0.459
	(0.085)	(0.869)	(0.103)	(1.875)	(0.149)	(1.043)	(0.094)	(1.122)	(0.082)	(2.006)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.013	0.092	0.019	0.110	0.005	0.140	0.020	0.122	0.009	0.055
Adjusted R-squared	0.009	0.068	0.012	0.064	-0.004	0.092	0.013	0.077	0.001	0.003

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 17. Relevance factor OLS models, pooled and by MSI and women's college status (Testing H3)

	Relevance									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	0.100	0.108	0.146	0.172	-0.023	0.039	0.021	0.023	0.059	-0.200
	(0.101)	(0.104)	(0.119)	(0.126)	(0.188)	(0.196)	(0.119)	(0.122)	(0.118)	(0.192)
Minority-identifying (no omit.)										
Minority-identifying	-0.202	-0.159	-0.187	-0.126	-0.255	-0.071	-0.178	-0.090	-0.410	-0.533
	(0.161)	(0.164)	(0.302)	(0.237)	(0.188)	(0.214)	(0.166)	(0.179)	(0.289)	(0.291)
Female # Minority-identifying	0.070	0.092	0.001	-0.122	0.228	0.116	0.013	0.010	0.175	0.298
	(0.187)	(0.187)	(0.328)	(0.278)	(0.249)	(0.273)	(0.227)	(0.244)	(0.310)	(0.304)
Age		-0.086		0.030		-0.049		-0.074		-0.008
		(0.053)		(0.115)		(0.060)		(0.064)		(0.094)
Age # Age		0.002*		-0.001		0.001		0.002		0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.052		0.069		-0.047		0.059		-0.020
		(0.276)		(0.486)		(0.199)		(0.311)		(0.221)
Household income (less than 30000 omit.)										
$30000-49999		-0.085		-0.073		-0.056		-0.157		0.007
		(0.181)		(0.283)		(0.211)		(0.222)		(0.253)
$50000-99999		-0.018		-0.017		0.026		-0.065		0.075
		(0.185)		(0.305)		(0.213)		(0.258)		(0.162)
$100000-249999		-0.084		-0.177		0.034		0.013		-0.299
		(0.169)		(0.280)		(0.188)		(0.219)		(0.222)
$250000 or more		0.125		0.011		0.368		0.140		0.182
		(0.172)		(0.260)		(0.317)		(0.225)		(0.173)
Prefer not to say		-0.275		-0.588		0.083		-0.314		-0.046
		(0.217)		(0.382)		(0.175)		(0.291)		(0.175)
Degree in pursuit of (certificate omit.)										
Associate's		0.087		0.135		0.447		0.047		0.151
		(0.321)		(0.376)		(0.263)		(0.290)		(0.336)
Bachelor's		-0.061		-0.325		0.389		-0.109		0.058
		(0.226)		(0.227)		(0.277)		(0.239)		(0.196)
Two-year college		-0.447		-1.831*		-0.056		-0.404		
		(0.362)		(0.786)		(0.642)		(0.551)		
State (State 4 omit.)										
State 1		0.099		-0.450		0.163		0.179		
		(0.190)		(0.581)		(0.271)		(0.256)		
State 2		-0.017		0.233				0.038		-0.821
		(0.197)		(0.322)				(0.317)		(0.663)
State 3		0.012		-0.125		-0.121		-0.029		-0.409
		(0.206)		(0.506)		(0.185)		(0.606)		(0.327)
Pell recipients (%)		-0.004		0.012		-0.007		-0.001		0.001
		(0.004)		(0.016)		(0.011)		(0.006)		(0.009)
Student-faculty ratio		0.044		0.077		0.012		0.051		-0.172
		(0.029)		(0.089)		(0.055)		(0.041)		(0.134)
Percent admitted		-0.003		0.000		-0.003		-0.005		-0.011
		(0.003)		(0.007)		(0.004)		(0.010)		(0.008)
Constant	0.055	0.999	0.034	-0.781	0.112	0.411	0.031	0.667	0.285***	3.146
	(0.077)	(0.827)	(0.094)	(1.761)	(0.128)	(1.022)	(0.084)	(1.074)	(0.083)	(2.514)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.015	0.064	0.017	0.101	0.014	0.108	0.009	0.074	0.023	0.115
Adjusted R-squared	0.011	0.039	0.009	0.054	0.006	0.057	0.002	0.027	0.015	0.067

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 18. Belonging factor OLS models, pooled and by MSI and women's college status (Testing H3)

	Belonging									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.101	-0.061	-0.125	-0.086	-0.031	0.027	-0.084	-0.064	-0.148	-0.186
	(0.137)	(0.130)	(0.173)	(0.169)	(0.200)	(0.197)	(0.173)	(0.163)	(0.156)	(0.242)
Minority-identifying (no omit.)										
Minority-identifying	-0.218	-0.087	-0.206	-0.123	-0.161	-0.050	-0.217	-0.061	-0.050	0.000
	(0.155)	(0.169)	(0.268)	(0.239)	(0.201)	(0.229)	(0.162)	(0.187)	(0.263)	(0.294)
Female # Minority-identifying	0.038	0.036	-0.023	-0.015	0.054	-0.014	-0.166	-0.100	0.015	-0.022
	(0.199)	(0.191)	(0.313)	(0.272)	(0.263)	(0.275)	(0.249)	(0.245)	(0.304)	(0.330)
Age		-0.002		0.133		0.003		-0.003		0.027
		(0.052)		(0.116)		(0.057)		(0.063)		(0.098)
Age # Age		0.000		-0.002		0.001		0.000		-0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.090		-0.091		0.146		0.086		0.077
		(0.249)		(0.419)		(0.211)		(0.273)		(0.246)
Household income (less than 30000 omit.)										
$30000-49999		0.018		0.236		-0.101		-0.150		0.476
		(0.180)		(0.295)		(0.208)		(0.203)		(0.333)
$50000-99999		0.032		0.179		-0.047		-0.125		0.414*
		(0.171)		(0.255)		(0.223)		(0.236)		(0.179)
$100000-249999		0.170		0.277		0.131		0.157		0.294
		(0.162)		(0.244)		(0.197)		(0.219)		(0.176)
$250000 or more		0.438*		0.460		0.668*		0.452		0.449*
		(0.174)		(0.237)		(0.290)		(0.233)		(0.187)
Prefer not to say		-0.258		-0.257		-0.215		-0.391		0.199
		(0.192)		(0.323)		(0.206)		(0.251)		(0.195)
Degree in pursuit of (certificate omit.)										
Associate's		0.019		-0.449		0.612***		-0.011		0.029
		(0.391)		(0.493)		(0.174)		(0.389)		(0.413)
Bachelor's		-0.288		-0.712		0.413*		-0.299		-0.201
		(0.364)		(0.379)		(0.198)		(0.377)		(0.237)
Two-year college		-0.415		-0.229		-0.468		-0.362		
		(0.344)		(0.931)		(0.622)		(0.460)		
State (State 4 omit.)										
State 1		0.180		0.219		0.216		0.239		
		(0.178)		(0.494)		(0.282)		(0.224)		
State 2		-0.216		0.032				-0.200		-0.045
		(0.184)		(0.283)				(0.285)		(0.633)
State 3		0.134		0.298		-0.046		0.152		0.032
		(0.184)		(0.432)		(0.195)		(0.434)		(0.320)
Pell recipients (%)		-0.004		-0.010		-0.012		-0.002		0.005
		(0.004)		(0.016)		(0.011)		(0.005)		(0.010)
Student-faculty ratio		0.020		0.049		0.011		0.025		0.014
		(0.029)		(0.081)		(0.052)		(0.038)		(0.127)
Percent admitted		-0.004		-0.000		-0.003		-0.005		-0.003
		(0.003)		(0.006)		(0.005)		(0.007)		(0.009)
Constant	0.173	0.298	0.204	-1.209	0.087	-0.051	0.170	0.252	0.194*	-0.438
	(0.088)	(0.848)	(0.108)	(1.777)	(0.147)	(0.999)	(0.097)	(1.070)	(0.082)	(1.981)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.013	0.096	0.023	0.110	0.004	0.147	0.025	0.133	0.004	0.048
Adjusted R-squared	0.009	0.072	0.016	0.064	-0.005	0.099	0.018	0.090	-0.005	-0.004

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 19. Growth mindset factor OLS models, pooled and by MSI and women's college status (Testing H3)

	Growth mindset									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.084	-0.061	-0.097	-0.081	-0.043	0.016	-0.089	-0.064	-0.055	-0.011
	(0.112)	(0.102)	(0.136)	(0.123)	(0.172)	(0.180)	(0.136)	(0.123)	(0.149)	(0.205)
Minority-identifying (no omit.)										
Minority-identifying	-0.171	-0.017	-0.185	-0.084	-0.037	0.033	-0.178	-0.019	0.313	0.340
	(0.122)	(0.130)	(0.208)	(0.188)	(0.163)	(0.198)	(0.128)	(0.141)	(0.166)	(0.196)
Female # Minority-identifying	-0.023	-0.071	-0.020	-0.027	-0.082	-0.099	-0.113	-0.086	-0.450*	-0.433
	(0.162)	(0.159)	(0.247)	(0.233)	(0.226)	(0.258)	(0.200)	(0.204)	(0.227)	(0.246)
Age		-0.008		0.057		0.004		-0.020		-0.041
		(0.047)		(0.104)		(0.053)		(0.058)		(0.090)
Age # Age		0.000		-0.001		0.000		0.001		0.001
		(0.001)		(0.002)		(0.001)		(0.001)		(0.001)
Age missing		-0.076		-0.172		-0.066		-0.087		0.005
		(0.211)		(0.314)		(0.205)		(0.232)		(0.176)
Household income (less than 30000 omit.)										
$30000-49999		0.097		0.371		-0.060		-0.043		0.500
		(0.176)		(0.289)		(0.192)		(0.204)		(0.316)
$50000-99999		0.169		0.309		0.081		0.085		0.380
		(0.153)		(0.263)		(0.169)		(0.197)		(0.231)
$100000-249999		0.199		0.289		0.179		0.205		0.252
		(0.156)		(0.257)		(0.169)		(0.196)		(0.243)
$250000 or more		0.369*		0.439		0.477*		0.344		0.487*
		(0.165)		(0.253)		(0.242)		(0.208)		(0.242)
Prefer not to say		-0.052		-0.134		0.064		-0.141		0.223
		(0.178)		(0.305)		(0.176)		(0.228)		(0.217)
Degree in pursuit of (certificate omit.)										
Associate's		0.696**		1.139***		0.530		0.676*		0.468
		(0.265)		(0.338)		(0.586)		(0.279)		(0.417)
Bachelor's		0.395		0.393*		0.434		0.397		0.279
		(0.203)		(0.195)		(0.589)		(0.227)		(0.187)
Two-year college		-0.401		-0.146		-0.511		-0.331		
		(0.307)		(0.839)		(0.571)		(0.427)		
State (State 4 omit.)										
State 1		0.107		0.513		0.152		0.092		
		(0.152)		(0.449)		(0.248)		(0.189)		
State 2		-0.146		-0.093				-0.220		0.470
		(0.156)		(0.240)				(0.243)		(0.600)
State 3		0.034		0.253		-0.087		0.050		0.291
		(0.162)		(0.373)		(0.179)		(0.376)		(0.323)
Pell recipients (%)		-0.005		-0.016		-0.006		-0.003		-0.001
		(0.004)		(0.013)		(0.011)		(0.005)		(0.009)
Student-faculty ratio		0.012		0.020		0.018		0.009		0.039
		(0.026)		(0.065)		(0.049)		(0.034)		(0.130)
Percent admitted		-0.002		-0.000		-0.000		-0.003		0.008
		(0.003)		(0.005)		(0.004)		(0.006)		(0.009)
Constant	0.153*	-0.259	0.213*	-0.823	-0.012	-0.699	0.155	0.005	0.128*	-1.071
	(0.072)	(0.735)	(0.086)	(1.589)	(0.124)	(1.050)	(0.079)	(0.948)	(0.065)	(1.955)
N (Obs.)	764	764	407	407	357	357	417	417	347	347
R-squared	0.017	0.092	0.024	0.125	0.005	0.113	0.023	0.118	0.012	0.061
Adjusted R-squared	0.013	0.068	0.017	0.080	-0.003	0.063	0.016	0.073	0.003	0.009

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 20. "We discuss important real world issues in class" OLS models, pooled and by MSI and women's college status (Testing H3)

	We discuss important real world issues in class									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	0.145	0.179	0.167	0.293	0.085	0.143	0.034	0.052	0.124	-0.431*
	(0.155)	(0.145)	(0.193)	(0.203)	(0.237)	(0.269)	(0.190)	(0.178)	(0.182)	(0.208)
Minority-identifying (no omit.)										
Minority-identifying	-0.342	-0.105	-0.328	-0.080	-0.304	-0.049	-0.313	-0.069	-0.607	-0.707
	(0.221)	(0.236)	(0.395)	(0.301)	(0.260)	(0.359)	(0.228)	(0.263)	(0.593)	(0.581)
Female # Minority-identifying	0.136	0.030	0.162	-0.074	0.105	-0.004	0.064	-0.021	0.264	0.462
	(0.260)	(0.257)	(0.429)	(0.344)	(0.346)	(0.433)	(0.312)	(0.340)	(0.614)	(0.591)
Age		-0.093		0.158		-0.093		-0.124		0.114
		(0.076)		(0.138)		(0.094)		(0.091)		(0.115)
Age # Age		0.002		-0.003		0.002		0.002		-0.002
		(0.001)		(0.003)		(0.001)		(0.001)		(0.002)
Age missing		-0.235		-0.353		-0.278		-0.235		-0.299
		(0.389)		(0.658)		(0.322)		(0.440)		(0.342)
Household income (less than 30000 omit.)										
$30000-49999		-0.099		-0.289		0.044		-0.305		0.199
		(0.259)		(0.311)		(0.359)		(0.327)		(0.325)
$50000-99999		-0.068		-0.168		0.086		-0.199		0.278
		(0.237)		(0.309)		(0.341)		(0.325)		(0.291)
$100000-249999		-0.222		-0.361		-0.073		-0.299		-0.036
		(0.237)		(0.319)		(0.322)		(0.308)		(0.321)
$250000 or more		0.058		-0.072		0.054		-0.077		0.489
		(0.238)		(0.296)		(0.487)		(0.305)		(0.294)
Prefer not to say		-0.250		-0.773		0.306		-0.373		0.126
		(0.299)		(0.459)		(0.300)		(0.389)		(0.329)
Degree in pursuit of (certificate omit.)										
Associate's		-0.362		-0.397		0.095		-0.439		0.378
		(0.422)		(0.654)		(0.242)		(0.377)		(0.598)
Bachelor's		-0.404		-0.733		0.166		-0.501		0.084
		(0.323)		(0.397)		(0.307)		(0.340)		(0.248)
Two-year college		-0.359		-1.215		-0.045		-0.063		
		(0.515)		(1.078)		(0.860)		(0.737)		
State (State 4 omit.)										
State 1		-0.016		-0.363		0.222		-0.111		
		(0.285)		(0.768)		(0.362)		(0.357)		
State 2		-0.256		-0.200				-0.652		0.230
		(0.236)		(0.378)				(0.358)		(0.748)
State 3		-0.246		-0.298		-0.373		-0.502		-0.442
		(0.299)		(0.639)		(0.298)		(0.797)		(0.367)
Pell recipients (%)		-0.015*		-0.003		-0.014		-0.012		0.021
		(0.007)		(0.020)		(0.014)		(0.009)		(0.013)
Student-faculty ratio		0.047		0.076		0.019		0.004		-0.230
		(0.039)		(0.116)		(0.069)		(0.054)		(0.153)
Percent admitted		-0.004		-0.003		-0.001		-0.002		0.002
		(0.005)		(0.007)		(0.008)		(0.014)		(0.012)
Constant	5.871***	7.801***	5.893***	4.793*	5.810***	7.058***	5.843***	8.984***	6.143***	6.145*
	(0.113)	(1.158)	(0.142)	(2.067)	(0.165)	(1.530)	(0.124)	(1.433)	(0.135)	(2.702)
N (Obs.)	754	754	405	405	349	349	410	410	344	344
R-squared	0.020	0.074	0.020	0.127	0.011	0.079	0.013	0.079	0.022	0.127
Adjusted R-squared	0.016	0.049	0.012	0.081	0.003	0.026	0.006	0.031	0.014	0.079

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 21. "People like me can become economists" OLS models, pooled and by MSI and women's college status (Testing H3)

	People like me can become economists									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	-0.102	-0.064	-0.074	-0.084	-0.157	-0.007	-0.074	-0.031	-0.142	-0.248
	(0.180)	(0.172)	(0.231)	(0.219)	(0.235)	(0.256)	(0.215)	(0.214)	(0.261)	(0.314)
Minority-identifying (no omit.)										
Minority-identifying	-0.198	-0.086	-0.026	0.038	-0.197	-0.238	-0.206	-0.024	0.657**	0.615*
	(0.175)	(0.193)	(0.255)	(0.255)	(0.221)	(0.232)	(0.185)	(0.206)	(0.246)	(0.305)
Female # Minority-identifying	-0.235	-0.323	-0.513	-0.430	0.002	-0.310	-0.542	-0.489	-0.866*	-1.006*
	(0.242)	(0.230)	(0.339)	(0.302)	(0.316)	(0.340)	(0.313)	(0.300)	(0.344)	(0.408)
Age		-0.133*		-0.328*		-0.041		-0.120		-0.219
		(0.067)		(0.158)		(0.073)		(0.081)		(0.158)
Age # Age		0.002*		0.005		0.001		0.002		0.003
		(0.001)		(0.003)		(0.001)		(0.001)		(0.003)
Age missing		-0.287		-0.360		-0.137		-0.231		-0.488
		(0.294)		(0.481)		(0.274)		(0.329)		(0.586)
Household income (less than 30000 omit.)										
$30000-49999		0.111		0.377		0.018		-0.066		0.507
		(0.224)		(0.371)		(0.246)		(0.244)		(0.449)
$50000-99999		0.125		0.028		0.170		0.048		0.295
		(0.199)		(0.334)		(0.219)		(0.256)		(0.296)
$100000-249999		0.083		0.074		0.040		0.144		-0.013
		(0.219)		(0.339)		(0.255)		(0.274)		(0.352)
$250000 or more		0.344		0.307		0.678*		0.447		0.122
		(0.237)		(0.357)		(0.289)		(0.278)		(0.450)
Prefer not to say		-0.415		-0.666		-0.204		-0.490		-0.115
		(0.234)		(0.395)		(0.247)		(0.286)		(0.341)
Degree in pursuit of (certificate omit.)										
Associate's		0.105		-0.042		0.365		0.080		0.810
		(0.318)		(0.490)		(0.402)		(0.315)		(0.546)
Bachelor's		-0.220		-0.122		0.103		-0.250		0.370
		(0.251)		(0.315)		(0.428)		(0.253)		(0.327)
Two-year college		-0.174		1.115		-0.812		-0.162		
		(0.412)		(1.104)		(0.703)		(0.510)		
State (State 4 omit.)										
State 1		0.142		0.240		0.170		0.130		
		(0.224)		(0.686)		(0.321)		(0.261)		
State 2		-0.360		-0.459				-0.385		-1.559
		(0.267)		(0.440)				(0.397)		(0.964)
State 3		0.483*		0.232		0.826***		0.315		0.209
		(0.214)		(0.536)		(0.246)		(0.501)		(0.554)
Pell recipients (%)		-0.003		-0.015		-0.009		0.001		-0.021
		(0.006)		(0.020)		(0.012)		(0.007)		(0.012)
Student-faculty ratio		0.012		-0.029		0.103		0.005		-0.165
		(0.036)		(0.091)		(0.064)		(0.051)		(0.204)
Percent admitted		-0.011**		-0.004		-0.018***		-0.010		-0.023
		(0.004)		(0.008)		(0.005)		(0.009)		(0.012)
Constant	6.075***	8.511***	6.130***	11.765***	5.924***	6.239***	6.077***	8.238***	6.063***	12.781***
	(0.125)	(1.006)	(0.159)	(2.397)	(0.164)	(1.396)	(0.137)	(1.272)	(0.160)	(3.103)
N (Obs.)	741	741	396	396	345	345	403	403	338	338
R-squared	0.030	0.134	0.052	0.168	0.009	0.166	0.051	0.164	0.016	0.134
Adjusted R-squared	0.026	0.110	0.044	0.123	0.000	0.117	0.044	0.120	0.007	0.085

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 22. "I feel the professor believes I can learn the material" OLS models, pooled and by MSI and women's college status (Testing H3)

	I feel the professor believes I can learn the material									
	Pooled		PWI		MSI		Co-ed		Women's	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)										
Female	0.085	0.129	0.099	0.201	0.060	0.132	0.080	0.132	0.044	0.100
	(0.158)	(0.139)	(0.200)	(0.185)	(0.189)	(0.199)	(0.204)	(0.170)	(0.185)	(0.351)
Minority-identifying (no omit.)										
Minority-identifying	-0.131	0.127	-0.091	0.100	-0.014	-0.009	-0.128	0.126	0.245	0.337
	(0.151)	(0.155)	(0.235)	(0.207)	(0.188)	(0.224)	(0.159)	(0.171)	(0.229)	(0.249)
Female # Minority-identifying	-0.135	-0.233	-0.195	-0.229	-0.126	-0.017	-0.158	-0.163	-0.511	-0.500
	(0.211)	(0.191)	(0.303)	(0.261)	(0.260)	(0.279)	(0.276)	(0.255)	(0.291)	(0.304)
Age		0.012		0.180		-0.027		-0.018		0.041
		(0.056)		(0.122)		(0.066)		(0.068)		(0.121)
Age # Age		0.000		-0.004		0.001		0.000		-0.000
		(0.001)		(0.002)		(0.001)		(0.001)		(0.002)
Age missing		0.049		-0.038		0.047		0.061		0.001
		(0.231)		(0.371)		(0.226)		(0.255)		(0.180)
Household income (less than 30000 omit.)										
$30000-49999		0.271		0.687*		-0.028		0.091		0.714
		(0.212)		(0.342)		(0.235)		(0.252)		(0.376)
$50000-99999		0.370		0.512		0.286		0.321		0.493
		(0.190)		(0.333)		(0.198)		(0.237)		(0.328)
$100000-249999		0.334		0.446		0.296		0.275		0.516
		(0.197)		(0.327)		(0.205)		(0.246)		(0.327)
$250000 or more		0.656**		0.766*		0.607*		0.653*		0.658
		(0.216)		(0.335)		(0.289)		(0.271)		(0.337)
Prefer not to say		0.019		0.059		-0.049		-0.073		0.274
		(0.213)		(0.370)		(0.218)		(0.264)		(0.339)
Degree in pursuit of (certificate omit.)										
Associate's		0.674		0.796		1.119		0.718		0.382
		(0.479)		(0.490)		(0.803)		(0.516)		(0.486)
Bachelor's		0.237		-0.189		0.990		0.279		0.297
		(0.439)		(0.387)		(0.809)		(0.485)		(0.225)
Two-year college		-0.621		-0.930		-0.956		-0.627		
		(0.362)		(0.944)		(0.621)		(0.502)		
State (State 4 omit.)										
State 1		0.135		0.163		0.313		0.091		
		(0.174)		(0.473)		(0.274)		(0.221)		
State 2		-0.180		-0.297				-0.266		0.401
		(0.215)		(0.349)				(0.340)		(0.879)
State 3		-0.094		-0.281		-0.145		-0.107		0.076
		(0.187)		(0.441)		(0.214)		(0.437)		(0.443)
Pell recipients (%)		-0.005		0.001		-0.004		-0.004		0.005
		(0.004)		(0.015)		(0.011)		(0.006)		(0.014)
Student-faculty ratio		0.006		0.030		0.034		0.003		-0.030
		(0.030)		(0.077)		(0.052)		(0.041)		(0.166)
Percent admitted		-0.001		-0.004		0.004		-0.001		0.010
		(0.003)		(0.006)		(0.005)		(0.007)		(0.011)
Constant	6.137***	5.501***	6.207***	3.737*	5.947***	4.596***	6.131***	6.025***	6.196***	4.155
	(0.100)	(0.933)	(0.127)	(1.793)	(0.133)	(1.313)	(0.111)	(1.170)	(0.109)	(2.530)
N (Obs.)	755	755	403	403	352	352	411	411	344	344
R-squared	0.011	0.109	0.013	0.127	0.002	0.143	0.010	0.132	0.018	0.079
Adjusted R-squared	0.007	0.085	0.006	0.082	-0.007	0.094	0.002	0.088	0.009	0.028

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

4.4 Additional sub-group analyses

Our sample contains sufficient numbers (100 or more, as per our pre-analysis plan) of students from some racial/ethnic backgrounds to further disaggregate student race and ethnicity beyond simply minority-identifying. We disaggregate students who identified as (1) Black/African American, (2) Asian/Native Hawaiian/Pacific Islander, (3) White (non-Hispanic), and (4) an "other race" category, which includes students who identify as Hispanic or Indigenous/American Indian/Alaskan Native, or who preferred not to say or to self-describe when asked about their race. Students who reported multiple racial/ethnic identities are included in each of the categories they identify with.

When assessing mean RBG outcomes for students who identify within each race category compared to those who do not, as shown in the appendix, Table 23, some significant differences emerge. Black/African American students are significantly less likely to agree that they miss important aspects of the issues they study in class and have a higher economics growth mindset. Despite being significantly more likely to feel that their class environment is welcoming, they are significantly less likely to feel supported by their tutors or teaching assistants.

Asian/Native Hawaiian/Pacific Islander students have a significantly lower overall RBG factor, as well as lower belonging and growth mindset factors, and lower scores for several specific items. This group of students is significantly less likely to feel that professors use examples relatable to their lives, that the class environment is welcoming, and that they have access to the resources they need to reach their potential in their economics course. They also feel less comfortable asking questions in class, are less likely to believe that people like them can become economists, and have less of a belief that they can learn the material.

Examining outcomes for white students involves a similar, but not identical, comparison to that presented in the minority-identifying versus not minority identifying section of Table 7. There are 39 the minority-identifying students in our sample who identify as white as well as at least one other race or ethnicity, and this subset of students is leads to some outcome differences between white and non-white students that were not present between minority and non-minority students. In addition to the differences found between minority and non-minority students in Table 7, we find that white students also report being more comfortable asking questions during their professor's office hours. White students are not, however, significantly more likely to find the textbook easy to understand or significantly less likely to feel that important aspects of issues studied in their classes are missed, which are differences that were found in the broad minority-identifying versus not minority-identifying comparison.

Finally, students who fall into the "other race" category have a significantly lower overall RBG factor, are less likely to agree that economics gives them a useful framework for thinking about important issues, are more likely to believe that their class misses important aspects of the issues they study, and feel less comfortable asking questions in their professor's office hours. They are significantly less likely to believe that they have access to the resources they need to reach their potential in their economics classes, or that their professors believe they can learn the material.

Table 24 presents regression results with the more specific racial/ethnic disaggregation (Black/African American, Asian/Native Hawaiian/Pacific Islander, white and non-Hispanic, and other race), without controls (spec.1) and with controls (spec. 2). We present the results only for the pooled sample, not by institution type, as there are not necessarily sizeable samples of different racial/ethnic groups within each institution type. The only significant difference we find

is a lower growth mindset factor for Asian/Native Hawaiian/Pacific Islander students, which is significant in specification 1 only.

In a further set of analyses, we examine subgroups that include only the female students (for women's colleges vs. co-ed) and only the minority-identifying students (for MSIs vs. PWIs).[25] Table 25 presents the results, in terms of mean differences. Minority students who attended MSIs, compared to minority students attending PWIs, were significantly more likely to find textbook examples relatable and to find their classrooms welcoming. They were significantly less likely to express that their classes missed important aspects of issues and to feel different from typical economics student, but at the same time had less of a sense that the instructor cared about whether they learned the material. Exploring outcomes for the female subsample reveals that the significant differences found for the full sample of students attending women's versus co-ed colleges persist, plus women attending women's colleges are significantly more likely to find their class environments welcoming than those at co-ed colleges.

To understand the differences in RBG for students who attend different types of institutions we also re-run our linear regressions for only the female subsample and for only the minority-identifying subsample. Since female students have the option of attending women's colleges and minority-identifying students have the option of attending an MSI, it is important to understand what potential effects these institution choices could bring for these students' RBG outcomes. Table 26 displays results from a regression where the gender covariate is omitted due to an all-female sample and is replaced with a women's college covariate to make the comparison between co-educational and women's colleges, for female students. Among female students, those at women's colleges show significantly higher scores for relevance and increased agreement with the statement that "We discuss important, real world issues in class" compared to female students at co-ed schools, but these results are not robust to the inclusion of controls (spec. 2). As shown in Table 27, which uses an all-minority sample and includes an MSI covariate to compare PWIs and MSIs for minority-identifying students, there are no significant differences between the RBG outcomes of minority students who attend MSIs and those who do not.

5 Discussion and Conclusions

How can we increase the representation of female and racial/ethnic minority students in the field of economics? Past research had established that women and/or under-represented minority students had lower RBG than male non-underrepresented students (Bayer, Bhanot, Bronchetti, & O'Connell, 2020). This research, however, was at one institution and did not examine the potentially different experiences of women students from minority students, nor the intersections of these identities.

Our work expands upon previous work in this area in that we look at a broad range of institutions and examine different experiences in economics courses for women and for minority-identifying students. We see clear and significant descriptive differences for women relative to male/non-binary students as well as for minority-identifying students relative to white students in terms of their experience in economics courses with respect to RBG. While there are some commonalities between the experiences of female students and minority students (e.g. both groups had significant differences from their counterparts on "people like me can become

[25] In our pre-analysis plan we had intended to do similar analyses following a second wave, but added them for this wave as well to help explicate some of our results.

economists" and "feel different from the typical economics student") in other aspects RBG manifested differently for female students than minority-identifying students.

Specifically, minority students had significantly lower overall RBG ratings, a result that persisted across each of the relevance, belonging, and growth mindset factors in the descriptive work but was not robust to multivariate controls. In contrast, women had no significant difference in overall RBG factor and actually had a higher relevance factor than did male/non-binary students. These results may be related to students' experiences at MSIs and women's colleges as MSI growth mindset factors were lower and the women's college relevance factors were higher. These findings suggest that, while women and minority-identifying students face different issues in pursuing economics, there is potentially some role for identity affirming institutions in alleviating these effects.

Results from multivariate regressions suggest that some of the differences between women and male/non-binary students and minority-identifying and white students can be explained by other characteristics. Regressions looking at overall RBG ratings and at each of R, B, and G individually for both the pooled data and each institution type individually yielded no statistically significant gender effects. There were, however, significant gender differences for "people like me can become economists."

While the estimated RGB coefficients on the minority-identifying variable are not generally statistically significant, they are consistently negative, suggesting that minority students do not experience the same levels of RBG as white students. Within this result, however, the magnitude of these negative estimated coefficients is almost always smallest at MSIs (the exception being "people like me can become economists"). It may be that being at an MSI mitigates the reduction in RBG for minority students, but it is important to note that this is in comparison to white students attending MSIs, so any conclusion drawn from these results should be taken with a strong caveat.

If there are important differences in RBG among students at MSIs and women's colleges, this may be because of tangible differences between them and PWIs and co-ed institutions. Faculty at women's colleges and MSIs tend to have a more even gender balance, are more diverse both racially and in terms of their sub-disciplinary backgrounds, and employ different combinations of learning strategies and theoretical backgrounds. Past research has highlighted role models, including in the form of guest speakers, as important to women's persistence in economics (Patnaik, Pauley, Venator, & Wiswall, 2023; Porter & Serra, 2020). These effects may be mediated by RBG.

One result to come out of the multivariate analysis is that several different measures of RBG are significantly higher for students from higher-income families. This has not been a major area of past research but likely offers opportunities for future investigations. Other research has highlighted that economics majors are less socioeconomically diverse than average, and economics PhDs are the least socioeconomically diverse of all fields (Schultz & Stansbury, 2022).

Our research and results have several limitations. While we worked to balance the characteristics of institutions to sample, we had non-response issues at the institution, faculty, class, and student levels, and it may be that our respondents are not representative of the groups from which we sampled and the groups that we intentionally tried to oversample. Particularly given our oversampling of certain institution types, our results are not intended to be nationally representative. For instance, the significantly higher sense of relevance for female students was driven by the women's colleges that were oversampled.

Our regression results are likely underpowered as a result of there being relatively few students in some categorical groups, such as male students at women's colleges, or minority students at PWIs particularly. Our sample sizes were too small to allow for finer examination of some group identities such as non-binary students. Results disaggregating racial/ethnic minority groups suggest important differences that merit further investigation. Furthermore, we did not distinguish between types of MSIs in our analysis, but the distinction between the various types may be very important. For instance, research suggests that black students at HBCUs do not experience stereotype threat (Alston, Darity, Eckel, McNeil, & Sharpe, 2022).

Research on RBG in economics in two- versus four-year schools and for traditional age versus non-traditional aged students, and for first generation students may also be valuable. Students also typically experience economics for the first time in high school (Walstad & Rebeck, 2012), and understanding experiences and RBG at this stage is an important area for future research. Some of these questions may be answerable with existing data (including the surveys we used in our research, which will be made publicly available). However, answering others may require additional data collection, ideally including nationally representative data on RBG to better compare across students, institution types, and perhaps even disciplines.

This project is part of a multi-year research effort. As described in our pre-analysis plan, we will send a second survey to all the students who participated in the first wave to gather data on changes in RBG and persistence in economics. The second survey will enable us to investigate the role of institution type in RBG since with only one survey wave we are unable to distinguish the effect of the institution from selection. Specifically, it may be that students who choose to attend an MSI or a women's college are systematically different on unobserved dimensions that are correlated with RBG. With a second survey wave we can condition on baseline RBG to see if there are institutional differences in the change in RBG over time.

Nonetheless, even the descriptive disparities we demonstrate make important contributions to understanding, and ultimately addressing, representation in the field of economics. Establishing that there are disparities in RBG for underrepresented students and that these gaps exist outside of R1 and elite liberal arts settings leads to an important set of questions about what structural changes can address this issue. The second wave of our survey will help us learn if and how identity-focused institutions might influence RBG, but there are other interventions to investigate, and future research should consider how pedagogical, curricular, and other changes can address RBG.

Underrepresented students are unlikely to achieve parity in RBG without structural changes in how economics departments and faculty engage with students. For instance, introductory economics textbooks and lessons use examples that are disproportionately white and male (Clawson, 2002; Krafft et al., 2023; Stevenson & Zlotnick, 2018). This lack of representation in introductory materials may be particularly problematic since belonging at the principles level has been emphasized as an important site for fostering the inclusion and retention of underrepresented students (Al-Bahrani, 2022). Although some progress has been made, economics remains a largely "chalk and talk" discipline (Asarta, Chambers, & Harter, 2021). Interventions that develop RBG for underrepresented students are also likely to be best practices that increase RBG for all students and lead to retention and completion broadly. For instance, a "using big data to solve economic and social problems" course at Harvard was both highly-rated and achieved near gender parity (Bayer, Bruich, Chetty, & Housiaux, 2020). The impact of different pedagogical and curricular approaches to economics on RBG as well as on diversity and persistence remains an important area for future research.

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Table 23. Means and differences in RBG outcomes, by disaggregated racial/ethnic identities

	Black/African American				Asian/Native Hawaiian/Pacific Islander				White (non-Hispanic)				Other race			
	(0) Not Black/African American	(1) Black/African American	Difference: (1) - (0)	Total	(0) Not Asian/Native Hawaiian/Pacific Islander	(1) Asian/Native Hawaiian/Pacific Islander	Difference: (1) - (0)	Total	(0) Not White (non-Hispanic)	(1) White (non-Hispanic)	Difference: (1) - (0)	Total	(0) Not other race	(1) Other race	Difference: (1) - (0)	Total
Overall RBG factor	0.00	-0.00	0.00	0.00	0.05	-0.19	-0.24**	0.00	-0.10	0.11	0.21**	0.00	0.03	-0.18	-0.21*	0.00
Relevance factor	0.01	-0.02	-0.03	0.00	0.03	-0.11	-0.14	0.00	-0.08	0.09	0.17**	0.00	0.02	-0.15	-0.17	0.00
Relevance factor items																
The textbook is easy to understand	4.73	4.54	-0.19	4.68	4.72	4.57	-0.15	4.68	4.62	4.76	0.14	4.68	4.69	4.66	-0.03	4.68
Textbook examples were relatable to my life	4.94	5.00	0.06	4.95	4.98	4.87	-0.11	4.95	4.90	5.01	0.11	4.95	4.97	4.83	-0.14	4.95
Professor uses examples relatable to my life	5.46	5.53	0.07	5.48	5.53	5.27	-0.26*	5.48	5.42	5.54	0.12	5.48	5.49	5.39	-0.10	5.48
We discuss important real world issues in class	5.83	5.64	-0.19	5.78	5.81	5.70	-0.11	5.78	5.64	5.94	0.30**	5.78	5.81	5.60	-0.21	5.78
Useful framework for thinking about important issues	5.86	5.85	-0.01	5.86	5.88	5.81	-0.07	5.86	5.76	5.97	0.21**	5.86	5.91	5.58	-0.33**	5.86
We miss important aspects of the issues we study in [course]	3.96	3.56	-0.40**	3.86	3.80	4.07	0.27	3.86	3.94	3.78	-0.16	3.86	3.72	4.72	1.00***	3.86
Belonging factor	-0.01	0.02	0.03	0.00	0.05	-0.19	-0.24**	0.00	-0.09	0.10	0.19**	0.00	0.03	-0.16	-0.19	0.00
Belonging factor items																
My class environment is welcoming	5.39	5.60	0.21*	5.44	5.52	5.14	-0.38**	5.44	5.41	5.47	0.06	5.44	5.47	5.24	-0.23	5.44
I feel comfortable asking questions in class	5.58	5.76	0.18	5.62	5.71	5.30	-0.41***	5.62	5.53	5.72	0.19*	5.62	5.65	5.42	-0.23	5.62
I feel the professor cares about whether I was learning the material	5.89	5.91	0.02	6.05	5.92	5.82	-0.10	6.05	5.87	5.92	0.05	6.05	5.90	5.87	-0.03	5.90
I feel that students support each other	5.38	5.44	0.06	5.40	5.43	5.26	-0.17	5.40	5.33	5.47	0.14	5.40	5.40	5.34	-0.06	5.40
I feel supported by the tutor or teaching assistant	5.34	5.06	-0.28*	5.27	5.25	5.35	0.10	5.27	5.24	5.31	0.07	5.27	5.27	5.30	0.03	5.27
I feel comfortable asking questions during my professor's office hours	5.85	5.82	-0.03	5.84	5.86	5.78	-0.08	5.84	5.73	5.97	0.24**	5.84	5.88	5.62	-0.26*	5.84

	Black/African American				Asian/Native Hawaiian/Pacific Islander				White (non-Hispanic)				Other race			
	(0) Not Black/African American	(1) Black/African American	Difference: (1) - (0)	Total	(0) Not Asian/Native Hawaiian/Pacific Islander	(1) Asian/Native Hawaiian/Pacific Islander	Difference: (1) - (0)	Total	(0) Not White (non-Hispanic)	(1) White (non-Hispanic)	Difference: (1) - (0)	Total	(0) Not other race	(1) Other race	Difference: (1) - (0)	Total
I have access to the resources I need to reach my potential in this course	5.79	5.69	-0.10	5.76	5.82	5.57	-0.25*	5.76	5.63	5.91	0.28**	5.76	5.80	5.53	-0.27*	5.76
People like me can become economists	5.79	5.97	0.18	5.83	5.95	5.39	-0.56***	5.83	5.64	6.03	0.39***	5.83	5.87	5.63	-0.24	5.83
Feel different from the typical economics student	0.28	0.33	0.05	0.29	0.28	0.33	0.05	0.29	0.33	0.25	-0.08*	0.29	0.28	0.36	0.08	0.29
Growth factor	0.01	-0.02	-0.03	0.00	0.05	-0.18	-0.23**	0.00	-0.08	0.09	0.17**	0.00	0.02	-0.10	-0.12	0.00
Growth mindset factor items																
I believe I can learn the material	6.01	5.92	-0.09	5.99	6.07	5.69	-0.38***	5.99	5.90	6.09	0.19**	5.99	5.99	5.98	-0.01	5.99
I feel the professor believes I can learn the material	6.07	6.01	-0.06	6.05	6.08	5.94	-0.14	6.05	5.95	6.17	0.22**	6.05	6.08	5.85	-0.23*	6.05
Economics growth mindset	7.64	8.12	0.48**	7.76	7.79	7.64	-0.15	7.76	7.81	7.70	-0.11	7.76	7.81	7.46	-0.35	7.76
Other growth mindset items (not used in factors)																
Math growth mindset	7.14	7.70	0.56**	7.28	7.31	7.18	-0.13	7.28	7.48	7.07	-0.41*	7.28	7.34	6.93	-0.41	7.28
Business growth mindset	7.70	8.13	0.43**	7.81	7.84	7.68	-0.16	7.81	7.82	7.79	-0.03	7.81	7.87	7.40	-0.47*	7.81
Writing growth mindset	7.74	8.31	0.57**	7.88	7.97	7.56	-0.41*	7.88	7.81	7.96	0.15	7.88	7.92	7.65	-0.27	7.88
Intelligence growth mindset	6.84	7.74	0.90***	7.07	7.11	6.91	-0.20	7.07	7.33	6.78	-0.55**	7.07	7.06	7.14	0.08	7.07

Notes: *p<0.05; **p<0.01; ***p<0.001

Source: Authors' calculations based on RBG surveys

Table 24. Factor and item OLS models disaggregating race/ethnicity, pooled institution types

	RBG		Relevance		Belonging		Growth Mindset		We discuss important, real world issues in class		People like me can become economists		I feel the professor believes I can learn the material	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Gender (male/non-binary omit.)														
Female	0.025	0.056	0.172	0.197	-0.032	0.007	-0.078	-0.080	0.227	0.240	-0.142	-0.151	0.031	0.038
	(0.106)	(0.103)	(0.101)	(0.103)	(0.103)	(0.096)	(0.082)	(0.081)	(0.144)	(0.137)	(0.121)	(0.119)	(0.107)	(0.098)
Race/ethnicity (multiple possible)														
Black/African American	-0.183	-0.086	-0.120	-0.017	-0.130	-0.068	-0.255	-0.169	-0.224	0.079	0.189	0.195	-0.153	-0.052
	(0.242)	(0.274)	(0.225)	(0.259)	(0.237)	(0.264)	(0.186)	(0.208)	(0.314)	(0.340)	(0.209)	(0.230)	(0.220)	(0.223)
Asian/Native Hawaiian/Pacific Islander	-0.398	-0.406	-0.258	-0.304	-0.347	-0.349	-0.410*	-0.379	-0.230	-0.372	-0.376	-0.411	-0.243	-0.218
	(0.287)	(0.267)	(0.266)	(0.263)	(0.276)	(0.242)	(0.204)	(0.202)	(0.373)	(0.343)	(0.242)	(0.219)	(0.230)	(0.204)
White (non-Hispanic)	-0.057	-0.210	-0.011	-0.104	-0.032	-0.191	-0.136	-0.233	0.067	-0.156	0.295	0.131	0.012	-0.130
	(0.254)	(0.244)	(0.245)	(0.251)	(0.247)	(0.223)	(0.187)	(0.190)	(0.331)	(0.318)	(0.222)	(0.220)	(0.226)	(0.207)
Other race	-0.335	-0.231	-0.259	-0.216	-0.279	-0.184	-0.307	-0.185	-0.278	-0.182	-0.119	-0.063	-0.289	-0.160
	(0.279)	(0.248)	(0.292)	(0.269)	(0.266)	(0.236)	(0.212)	(0.197)	(0.361)	(0.317)	(0.289)	(0.277)	(0.291)	(0.253)
Age		-0.038		-0.087		-0.011		-0.010		-0.104		-0.142*		0.007
		(0.054)		(0.052)		(0.052)		(0.045)		(0.075)		(0.067)		(0.054)
Age # Age		0.001		0.002*		0.001		0.000		0.002		0.002*		0.000
		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)
Age missing		0.059		0.033		0.112		-0.093		-0.261		-0.222		0.076
		(0.273)		(0.269)		(0.236)		(0.193)		(0.374)		(0.296)		(0.222)
Household income (less than 30000 omit.)														
$30000-49999		0.011		-0.078		0.007		0.093		-0.099		0.102		0.268
		(0.195)		(0.183)		(0.179)		(0.174)		(0.259)		(0.217)		(0.208)
$50000-99999		0.017		-0.074		0.006		0.111		-0.160		0.059		0.294
		(0.196)		(0.195)		(0.174)		(0.162)		(0.255)		(0.201)		(0.202)
$100000-249000		0.127		-0.096		0.165		0.202		-0.215		-0.028		0.318
		(0.176)		(0.170)		(0.160)		(0.157)		(0.238)		(0.232)		(0.196)
$250000 or more		0.443*		0.138		0.482**		0.364*		0.127		0.376		0.650**
		(0.188)		(0.175)		(0.179)		(0.165)		(0.251)		(0.230)		(0.215)
Prefer not to say		-0.238		-0.255		-0.233		-0.049		-0.221		-0.349		-0.008

	RBG		Relevance		Belonging		Growth Mindset		We discuss important, real world issues in class		People like me can become economists		I feel the professor believes I can learn the material	
	Spec. 1	**Spec. 2**	**Spec. 1**	**Spec. 2**	**Spec. 1**	**Spec. 2**	**Spec. 1**	**Spec. 2**	**Spec. 1**	**Spec. 2**	**Spec. 1**	**Spec. 2**	**Spec. 1**	**Spec. 2**
		(0.211)		(0.210)		(0.185)		(0.170)		(0.285)		(0.231)		(0.210)
Degree in pursuit of (certificate omit.)														
Associate's		0.125		0.028		-0.080		0.544		-0.447		0.058		0.549
		(0.403)		(0.344)		(0.439)		(0.280)		(0.455)		(0.392)		(0.509)
Bachelor's		-0.199		-0.124		-0.399		0.253		-0.485		-0.226		0.119
		(0.373)		(0.288)		(0.425)		(0.234)		(0.400)		(0.345)		(0.480)
Two-year college		-0.481		-0.314		-0.443		-0.356		-0.194		-0.126		-0.661
		(0.369)		(0.353)		(0.339)		(0.301)		(0.503)		(0.399)		(0.357)
State (State 4 omit.)														
State 1		0.210		0.183		0.194		0.132		0.073		0.226		0.168
		(0.201)		(0.197)		(0.184)		(0.153)		(0.304)		(0.237)		(0.178)
State 2		-0.156		-0.008		-0.214		-0.111		-0.266		-0.280		-0.134
		(0.179)		(0.192)		(0.180)		(0.149)		(0.230)		(0.253)		(0.204)
State 3		-0.056		-0.125		0.004		-0.027		-0.492		0.161		-0.042
		(0.266)		(0.278)		(0.227)		(0.205)		(0.374)		(0.254)		(0.234)
Pell recipients (%)		-0.007		-0.006		-0.005		-0.007		-0.017*		-0.004		-0.007
		(0.005)		(0.005)		(0.005)		(0.004)		(0.007)		(0.006)		(0.005)
Student-faculty ratio		0.029		0.033		0.026		0.009		0.033		0.002		0.021
		(0.030)		(0.029)		(0.028)		(0.025)		(0.037)		(0.036)		(0.030)
Percent admitted		-0.003		-0.002		-0.004		-0.001		-0.002		-0.007		-0.002
		(0.003)		(0.003)		(0.003)		(0.002)		(0.004)		(0.004)		(0.003)
Constant	0.191	0.849	0.040	1.254	0.178	0.691	0.293	0.186	5.778***	8.285***	5.804***	8.528***	6.159***	5.796***
	(0.251)	(0.979)	(0.247)	(0.919)	(0.243)	(0.945)	(0.193)	(0.805)	(0.331)	(1.204)	(0.236)	(1.025)	(0.240)	(0.976)
N (Obs.)	787	787	787	787	787	787	787	787	777	777	764	764	778	778
R-squared	0.023	0.104	0.022	0.073	0.021	0.108	0.028	0.101	0.021	0.085	0.055	0.134	0.016	0.110
Adjusted R-squared	0.016	0.078	0.015	0.046	0.014	0.082	0.022	0.075	0.015	0.058	0.049	0.108	0.010	0.084

Source: Authors' calculations based on RBG surveys

Notes: *p<0.05; **p<0.01; ***p<0.001. Robust standard errors in parentheses

Table 25. Means and differences in student RBG outcomes, by MSI (minority-identifying students only) and women's college (female students only) status

	MSI vs. PWI				Women's vs. Co-ed			
	PWI	MSI	Difference: MSI - PWI	Total	Co-ed	Women's	Difference: Women's - co-ed	Total
Overall RBG factor	-0.07	-0.09	-0.02	-0.08	-0.08	0.06	0.14	-0.01
Relevance factor	-0.06	-0.06	0.00	-0.06	-0.03	0.17	0.20**	0.07
Relevance factor items								
The textbook is easy to understand	4.61	4.57	-0.04	4.59	4.76	4.62	-0.14	4.69
Textbook examples were relatable to my life	4.78	5.10	0.32*	4.94	4.97	5.01	0.04	5
Professor uses examples relatable to my life	5.44	5.43	-0.01	5.43	5.34	5.79	0.45***	5.57
We discuss important real world issues in class	5.77	5.58	-0.19	5.67	5.76	6.00	0.24*	5.89
Useful framework for thinking about important issues	5.86	5.76	-0.10	5.81	5.85	6.10	0.25**	5.98
We miss important aspects of the issues we study in [course]	4.21	3.66	-0.55**	3.92	3.90	3.89	-0.01	3.89
Belonging factor	-0.08	-0.06	0.02	-0.07	-0.10	0.03	0.13	-0.03
Belonging factor items								
My class environment is welcoming	5.17	5.59	0.42**	5.38	5.17	5.50	0.33**	5.35
I feel comfortable asking questions in class	5.49	5.61	0.12	5.55	5.44	5.62	0.18	5.53
I feel the professor cares about whether I was learning the material	6.02	5.76	-0.26*	5.89	5.88	5.93	0.05	5.91
I feel that students support each other	5.36	5.39	0.03	5.37	5.37	5.33	-0.04	5.35
I feel supported by the tutor or teaching assistant	5.34	5.14	-0.20	5.24	5.16	5.57	0.41**	5.37
I feel comfortable asking questions during my professor's office hours	5.88	5.70	-0.18	5.79	5.88	5.96	0.08	5.92
I have access to the resources I need to reach my potential in this course	5.59	5.66	0.07	5.63	5.69	5.75	0.06	5.72
People like me can become economists	5.76	5.66	-0.10	5.71	5.65	5.77	0.12	5.71
Feel different from the typical economics student	0.46	0.24	-0.22***	0.35	0.29	0.41	0.12**	0.36
Growth mindset factor	-0.04	-0.10	-0.06	-0.07	-0.07	-0.04	0.03	-0.06
Growth mindset factor items								
I believe I can learn the material	5.87	5.89	0.02	5.88	5.91	5.85	-0.06	5.88
I feel the professor believes I can learn the material	6.06	5.90	-0.16	5.98	6.07	6.04	-0.03	6.06
Economics growth mindset	7.89	7.78	-0.11	7.84	7.10	8.04	0.94***	7.59
Other growth mindset items (not used in factors)								
Math growth mindset	7.29	7.56	0.27	7.43	6.92	7.64	0.72***	7.30

	MSI vs. PWI				Women's vs. Co-ed			
	PWI	MSI	Difference : MSI - PWI	Total	Co-ed	Women's	Difference : Women's - co-ed	Total
Business growth mindset	7.79	7.87	0.08	7.83	7.36	7.86	0.50**	7.62
Writing growth mindset	7.69	8.12	0.43*	7.91	7.53	7.94	0.41*	7.75
Intelligence growth mindset	6.95	7.64	0.69**	7.30	6.97	7.31	0.34	7.15

Notes: *p<0.05; **p<0.01; ***p<0.001

Source: Authors' calculations based on RBG surveys

Table 26. Factor and item OLS models including women's college covariate, female students only

	RBG		Relevance		Belonging		Growth mindset		We discuss important real world issues in class		People like me can become economists		I feel the professor believes I can learn the material	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Women's college	0.211	0.127	0.249*	0.302	0.172	0.121	0.101	-0.160	0.334*	0.457	0.245	0.051	0.042	-0.240
	(0.115)	(0.187)	(0.104)	(0.186)	(0.117)	(0.187)	(0.105)	(0.148)	(0.137)	(0.246)	(0.173)	(0.235)	(0.140)	(0.186)
Minority-identifying (no omit.)														
Minority-identifying	-0.261*	-0.200	-0.197*	-0.208*	-0.225	-0.158	-0.221*	-0.121	-0.292*	-0.259	-0.495**	-0.570**	-0.277	-0.175
	(0.121)	(0.136)	(0.100)	(0.100)	(0.126)	(0.141)	(0.110)	(0.123)	(0.137)	(0.144)	(0.176)	(0.214)	(0.147)	(0.144)
Age		0.068		0.006		0.089		0.050		0.053		-0.186		0.091
		(0.075)		(0.069)		(0.073)		(0.066)		(0.082)		(0.102)		(0.080)
Age # Age		-0.001		-0.000		-0.001		-0.001		-0.001		0.003		-0.002
		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.002)		(0.001)
Age missing		-0.081		-0.065		-0.095		-0.001		-0.433		-0.565		-0.221
		(0.251)		(0.191)		(0.277)		(0.184)		(0.370)		(0.453)		(0.307)
Household income (less than 30000 omit.														
$30000-49999		0.027		-0.096		0.019		0.121		-0.112		0.046		0.352
		(0.236)		(0.208)		(0.238)		(0.234)		(0.277)		(0.333)		(0.275)
$50000-99999		0.103		-0.106		0.117		0.254		-0.023		0.065		0.333
		(0.176)		(0.184)		(0.164)		(0.182)		(0.246)		(0.249)		(0.253)
$100000-249999		0.063		-0.239		0.165		0.161		-0.284		-0.008		0.213
		(0.170)		(0.189)		(0.160)		(0.183)		(0.266)		(0.263)		(0.245)
$250000 or more		0.455*		0.146		0.477*		0.452*		0.213		0.156		0.617*
		(0.201)		(0.185)		(0.207)		(0.204)		(0.272)		(0.339)		(0.282)
Prefer not to say		0.020		0.023		0.005		0.065		0.178		-0.322		0.027
		(0.192)		(0.177)		(0.184)		(0.192)		(0.277)		(0.285)		(0.266)
Degree in pursuit of (certificate omit.)														
Associate's		0.622		0.284		0.600*		0.497		-0.179		0.548		1.065
		(0.326)		(0.377)		(0.281)		(0.583)		(0.296)		(0.448)		(0.837)
Bachelor's		0.763*		0.430		0.711*		0.589		0.395		0.812		1.165
		(0.344)		(0.389)		(0.322)		(0.598)		(0.321)		(0.541)		(0.863)
Two-year college		-0.857		-0.525		-0.636		-1.061*		-0.112		-0.253		-1.255*

	RBG		Relevance		Belonging		Growth mindset		We discuss important real world issues in class		People like me can become economists		I feel the professor believes I can learn the material	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
		(0.632)		(0.662)		(0.586)		(0.539)		(0.856)		(0.811)		(0.626)
State (State 4 omit.)														
State 1		0.473		0.448		0.427		0.248		0.772**		0.441		0.332
		(0.291)		(0.266)		(0.284)		(0.240)		(0.285)		(0.375)		(0.262)
State 2		0.370		0.189		0.286		0.427		0.360		0.382		0.626
		(0.319)		(0.327)		(0.300)		(0.250)		(0.419)		(0.526)		(0.367)
State 3		0.362		0.138		0.361		0.389*		0.046		0.940**		0.341
		(0.240)		(0.243)		(0.227)		(0.188)		(0.349)		(0.335)		(0.262)
Pell recipients (%)		-0.004		-0.000		-0.003		-0.011*		-0.010		-0.001		-0.005
		(0.006)		(0.006)		(0.006)		(0.005)		(0.007)		(0.009)		(0.007)
Student-faculty ratio		0.081		0.077		0.066		0.057		0.099*		0.079		0.065
		(0.043)		(0.040)		(0.040)		(0.037)		(0.050)		(0.055)		(0.045)
Percent admitted		0.001		-0.004		0.000		0.008		-0.003		-0.007		0.007
		(0.006)		(0.006)		(0.005)		(0.004)		(0.008)		(0.007)		(0.006)
Constant	0.044	-2.664*	0.067	-1.082	0.011	-2.823**	0.033	-2.112	5.897** *	3.968**	5.883** *	7.044** *	6.207** *	2.661
	(0.113)	(1.113)	(0.076)	(1.117)	(0.125)	(1.060)	(0.097)	(1.102)	(0.122)	(1.363)	(0.148)	(1.564)	(0.143)	(1.395)
N (Obs.)	453	453	453	453	453	453	453	453	446	446	436	436	446	446
R-squared	0.025	0.098	0.030	0.096	0.018	0.084	0.017	0.100	0.030	0.129	0.037	0.118	0.017	0.127
Adjusted R-squared	0.021	0.058	0.026	0.056	0.014	0.044	0.013	0.061	0.026	0.090	0.033	0.077	0.013	0.088

Notes: *p<0.05; **p<0.01; ***p<0.001

Source: Authors' calculations based on RBG surveys

Table 27. Factor and item OLS models including MSI covariate, minority-identifying students only

	RBG		Relevance		Belonging		Growth mindset		We discuss important real world issues in class		People like me can become economists		I feel the professor believes I can learn the material	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
MSI	-0.006	-0.133	0.039	0.004	0.015	-0.118	-0.080	-0.250	-0.130	0.142	-0.160	-0.180	-0.169	-0.144
	(0.170)	(0.373)	(0.171)	(0.430)	(0.155)	(0.290)	(0.125)	(0.260)	(0.227)	(0.587)	(0.164)	(0.323)	(0.144)	(0.285)
Gender (male/non-binary omit.)														
Female	-0.006	0.092	0.177	0.243	-0.060	0.052	-0.121	-0.086	0.258	0.260	-0.367*	-0.345*	-0.081	-0.037
	(0.169)	(0.163)	(0.169)	(0.165)	(0.154)	(0.146)	(0.125)	(0.129)	(0.227)	(0.218)	(0.164)	(0.153)	(0.144)	(0.134)
Age		-0.032		-0.102		0.019		-0.020		-0.164		-0.123		-0.050
		(0.077)		(0.076)		(0.069)		(0.067)		(0.114)		(0.079)		(0.077)
Age # Age		0.001		0.002		0.000		0.001		0.003		0.002		0.001
		(0.001)		(0.001)		(0.001)		(0.001)		(0.002)		(0.001)		(0.001)
Age missing		0.293		0.255		0.326		0.026		0.095		0.027		0.344
		(0.351)		(0.377)		(0.277)		(0.253)		(0.519)		(0.260)		(0.217)
Household income (less than 30000 omit.)														
$30000-49999		-0.059		-0.202		-0.022		0.060		-0.213		-0.005		0.204
		(0.215)		(0.210)		(0.197)		(0.206)		(0.307)		(0.243)		(0.242)
$50000-99999		0.001		-0.137		-0.017		0.169		-0.168		0.055		0.385
		(0.225)		(0.228)		(0.204)		(0.187)		(0.287)		(0.220)		(0.223)
$100000-249999		0.098		-0.232		0.154		0.270		-0.338		0.119		0.400
		(0.224)		(0.229)		(0.203)		(0.204)		(0.313)		(0.238)		(0.238)
$250000 or more		0.341		0.112		0.342		0.327		-0.164		-0.127		0.493
		(0.220)		(0.220)		(0.224)		(0.210)		(0.364)		(0.303)		(0.255)
Prefer not to say		-0.443		-0.399		-0.456*		-0.126		-0.419		-0.608*		-0.170
		(0.277)		(0.292)		(0.227)		(0.219)		(0.396)		(0.256)		(0.239)
Degree in pursuit of (certificate omit.)														
Associate's		-0.154		-0.210		-0.565		0.832*		-0.699		-0.408		0.573
		(0.467)		(0.303)		(0.505)		(0.354)		(0.545)		(0.471)		(0.813)
Bachelor's		-0.338		-0.265		-0.727		0.611		-0.749		-0.559		0.216
		(0.428)		(0.194)		(0.482)		(0.316)		(0.447)		(0.430)		(0.789)
Two-year college		-0.518		-0.198		-0.517		-0.473		-0.380		-0.476		-0.762
		(0.516)		(0.523)		(0.469)		(0.424)		(0.779)		(0.559)		(0.467)
State (State 4 omit.)														

	RBG		Relevance		Belonging		Growth mindset		We discuss important real world issues in class		People like me can become economists		I feel the professor believes I can learn the material	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
State 1		0.591*		0.430		0.610*		0.303		0.232		0.688*		0.466
		(0.292)		(0.281)		(0.285)		(0.229)		(0.504)		(0.344)		(0.244)
State 2		0.033		-0.057		0.102		-0.089		0.195		0.349		0.226
		(0.301)		(0.260)		(0.304)		(0.233)		(0.383)		(0.531)		(0.344)
State 3		0.230		0.040		0.358		0.064		-0.136		0.874**		0.037
		(0.285)		(0.320)		(0.240)		(0.213)		(0.446)		(0.292)		(0.247)
Pell recipients (%)		0.000		-0.003		0.001		0.000		-0.009		0.009		0.005
		(0.007)		(0.007)		(0.006)		(0.006)		(0.011)		(0.009)		(0.006)
Student-faculty ratio		0.030		0.021		0.034		0.015		0.050		0.046		0.012
		(0.063)		(0.070)		(0.052)		(0.046)		(0.094)		(0.059)		(0.051)
Percent admitted		-0.002		-0.002		-0.003		0.000		-0.003		-0.013*		0.001
		(0.006)		(0.006)		(0.005)		(0.004)		(0.009)		(0.005)		(0.005)
Constant	-0.079	0.144	-0.170	1.390	-0.054	-0.280	0.030	-0.631	5.607** *	8.466** *	5.974** *	7.510** *	6.108** *	5.756** *
	(0.205)	(1.214)	(0.208)	(1.152)	(0.181)	(1.147)	(0.141)	(1.070)	(0.269)	(1.724)	(0.162)	(1.348)	(0.152)	(1.395)
N (Obs.)	423	423	423	423	423	423	423	423	416	416	404	404	417	417
R-squared	0.000	0.108	0.008	0.084	0.001	0.127	0.006	0.092	0.013	0.069	0.024	0.169	0.007	0.127
Adjusted R-squared	-0.005	0.066	0.003	0.041	-0.004	0.086	0.001	0.049	0.008	0.025	0.019	0.127	0.003	0.085

Notes: *p<0.05; **p<0.01; ***p<0.001

Source: Authors' calculations based on RBG surveys