RELEVANCE, BELONGING, AND GROWTH MINDSET IN ECONOMICS: DIFFERENCES ACROSS INSTITUTION TYPES

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Disclaimers

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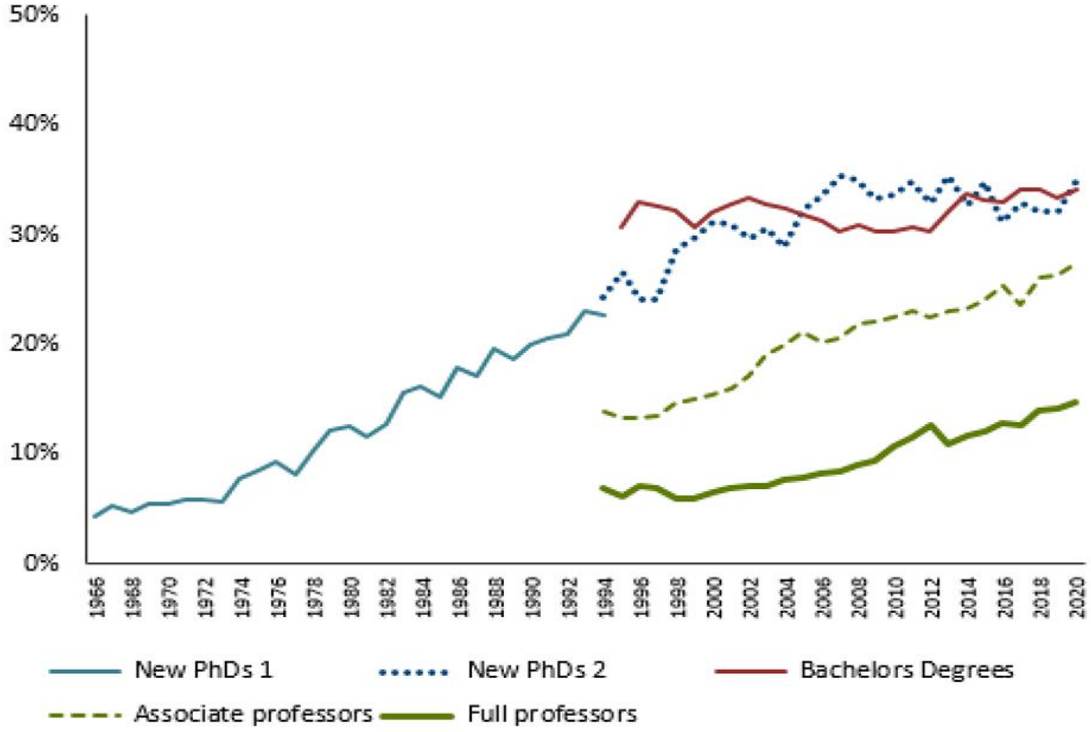
Motivation: Underrepresentation in Economics

- Only 19% of undergraduate economics degrees awarded to underrepresented minority (URM) students (32% of population, 27% of all bachelor's degrees) (CSMGEP 2022)
  - Lower than the percentage of undergraduate STEM degrees awarded to minority students (22%)
  - Share of degrees earned by minority students increased at a slower rate in economics than STEM
- Only 36% of economics undergraduate majors were women (Chari 2022)
  - Lower than the share of female college undergraduates (55%)
  - Share of degrees earned by female students has increased only slightly over time

Motivation: Underrepresentation in Economics

Women's shares of economics degrees and representation in economics faculty, 1966–2020

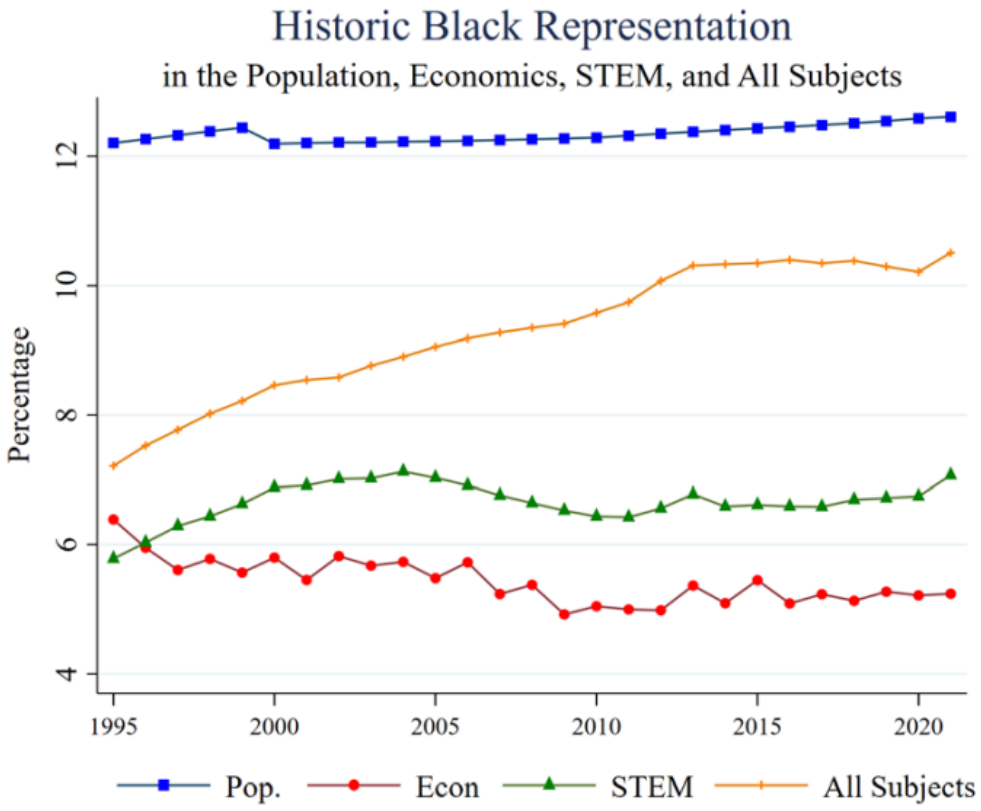
Source: Chevalier (2020) for all series except New PhDs 1, which is from National Center for Science and Engineering Statistics (2011).
https://www.federalreserve.gov/econres/notes/feds-notes/changes-in-womens-representation-in-economics-new-data-from-the-aea-papers-and-proceedings-20210806.html



Motivation: Underrepresentation in Economics

Black candidates' share of college degrees by discipline, 1995–2021

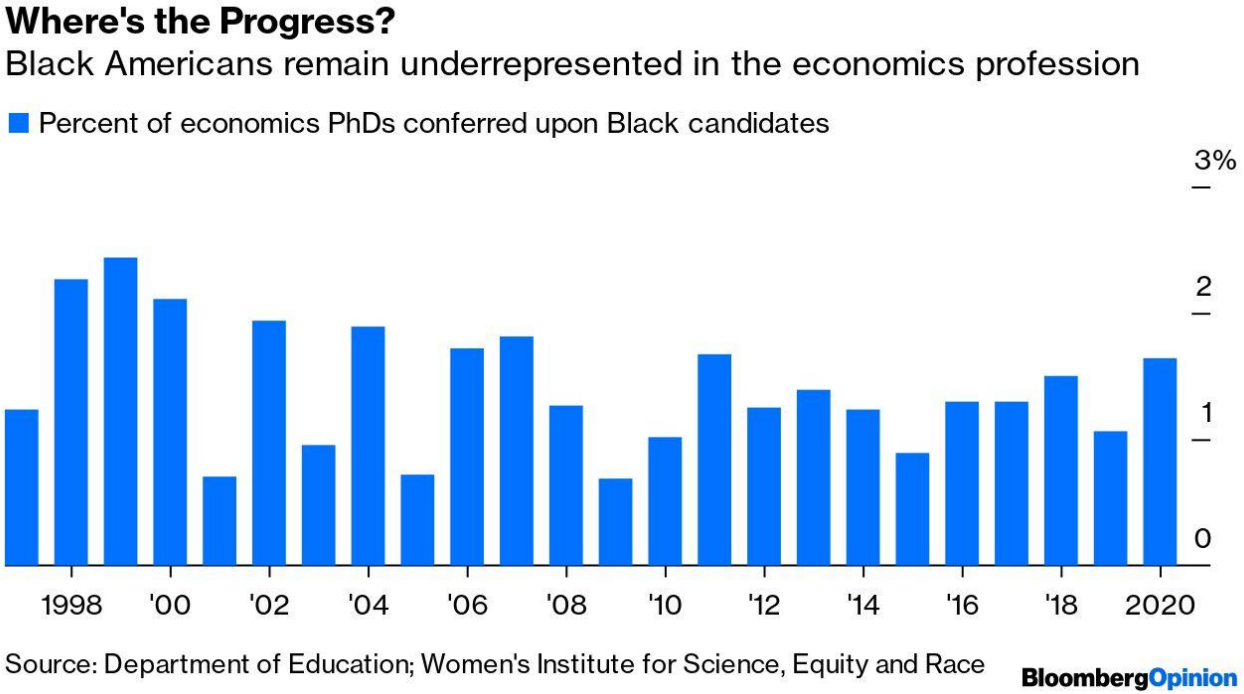
Source: CSMGEP (2022), https://www.aeaweb.org/content/file?id=18308



Motivation: Underrepresentation in Economics

Black candidates' share of Economics Ph.D.s, 1997–2020

Source: https://www.bloomberg.com/opinion/articles/2022-06-17/black-economist-shortage-is-fixable-with-more-training?embedded-checkout=true



Relevance, Belonging, and Growth Mindset (RBG)

- Relevance – Students perceiving the material to be directly relevant to their own life
- Belonging – Feeling socially integrated in classes and feeling that they belong
- Growth Mindset – Perception that the ability to understand economics is not fixed, but rather is a malleable quality that can improve and grow

- URM and female students in introductory economics courses have lower RBG relative to non-URM men (Bayer, Bhanot, et al. 2020).
- RBG correlates with course grades, persistence in, and completion of economics major
- Past research focused on elite institutions that serve a relatively small share of students, did not disaggregate gender difference from race/ethnicity

Identity-focused institutions may have a role to play

- Minority Serving Institutions (MSIs) and women's colleges – "identity-focused institutions" – promote RBG and pursuit of typically white and male-dominated STEM fields (Kinzie et al. 2007; Perna et al. 2009; White, DeCuir-Gunby, and Kim 2019, National Science Foundation 2021, Calkins, Binder, Shaat & Timple 2023).
- Women's colleges promote gender diversity in male-dominated fields such as economics (Butcher, McEwan, and Weerapana 2021; Calkins et al. 2022)
- Gender segregation itself may not play a key role
    - Booth and Hanna (2023) found no differences in student performance in economics with random assignment to segregated or co-ed tutorial sections

Why might identity-focused institutions be different?

- Instruction might differ between institution types. In our sample, classes at women's colleges were more likely to have a female guest speaker and to have peer instruction
- The instructor's identity differs between institution types. In our sample, MSIs had a higher percentage of Black/African American instructors and women's colleges had a higher percentage of female instructors

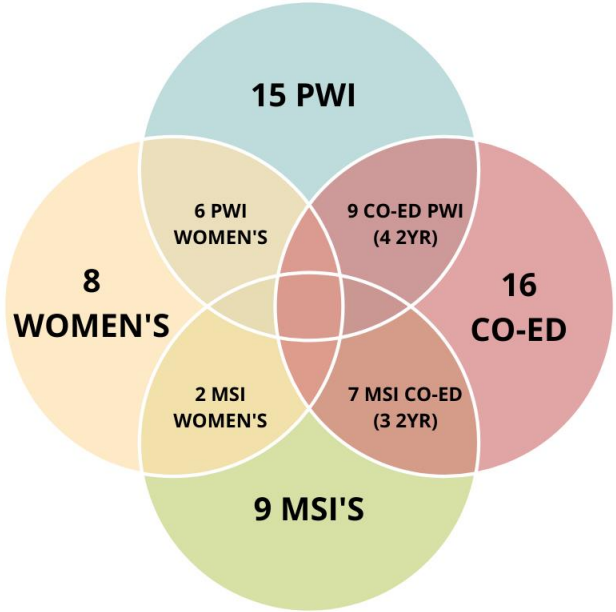
Research Questions and Hypotheses

- Does RBG differ between minority and non-minority students across different institution types?
- Does RBG differ between male and female students across different institution types?

- Hypotheses:
  - H1: Female-identifying students have lower RBG than male/non-binary students
  - H2: Minority-identifying students have lower RBG than non-minority students
  - H3: There is an interaction between being female and minority-identifying

Data: Sampling

- Sampling frame: schools listed in the 2020
  - Integrated Postsecondary Education Data System (IPEDS)
  - Stratified by:
    - Degree level (four-year/baccalaureate vs. two-year/associate programs),
    - Gender composition (women's colleges vs. co-educational institutions)
    - Racial/ethnic composition (MSIs vs. PWIs [Predominantly white institutions])
- Start of sample (N=5) for networking goals
- Bootstrap approach to balance institution characteristics
  - Pell, admit rate, student-faculty ratio



- Sample size
  - 4 states
  - 24 institutions
  - 49 faculty
  - 105 classes
  - 805 undergraduate students

Data: Surveys

- Fall 2022 surveys
- Faculty survey
  - Demographic, department and institution information
- Class survey
  - Describes each undergraduate economics class faculty taught during the 2022 fall semester
- Student survey
  - Demographic and background information
  - Measures of RBG in the context of their economics class
    - Similar RBG items from McDougall et al. (2021) and Bayer et al. (2020)
    - Key psychological constructs (Dweck 2008; Walton and Cohen 2011; Yeager and Dweck 2020)

Key Covariates and Controls

- Student level key covariates
  - Female identifying
    - Vs. male/non-binary
  - Minority-identifying
    - Any racial/ethnic identity *other* than White (non-Hispanic)
- Institution level key covariates
  - Women's College
  - MSI

- Student level controls
  - Age (quadratic)
  - Household income (categorical)
  - Degree type
- Institution level controls
  - Degree level (two or four-year)
  - State fixed effects
  - % of undergraduates who receive Pell grants
  - Selectivity (% admitted)
  - Student-faculty ratio

Relevance – 6 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

Belonging – 8 statements, 1 question

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

Q. Do you feel different from the typical economics student?

Growth Mindset – 3 statements

Seven point Likert scale agreement

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

Ten point slider

1. Economics ability is something you can't change very much. – Economics ability can be developed.

Methods

- Factor analysis to summarize student survey items on RBG
  - Relevance factor (6 items)
  - Belonging factor (9 items)
  - Growth mindset factor (3 items)
  - RBG factor (all items)
- T-tests for differences by
  - Gender
  - Minority-identifying
  - MSI vs. PWI
  - Women's vs. co-ed

- OLS regression models for RBG dimension *d* for individual *i,* first with just female, *f*, and minority-identifying, *u* (specification 1) and then with *k* controls, $X_{k,i}$ (specification 2)
  - For factors and item in each factor with largest difference
  - Pooled and by institution type
- $RBG_{d,i} = \beta_0 + \beta_1 f_i + \beta_2 u_i + \beta_k X_{k,i} + \varepsilon_i$
  - H1: Female-identifying students have lower RBG than male/non-binary students.
  - H2: Minority-identifying students have lower RBG than non-minority students
- $RBG_{d,i} = \beta_0 + \beta_1 f_i + \beta_2 u_i + \beta_3 f_i * u_i + \beta_k X_{k,i} + \varepsilon_i$
  - H3: There is an interaction between being female and minority-identifying

Descriptive Results - Institution characteristics

MSIs vs. PWIs

Serve

- MSIs have more associate degree students, fewer economics or math majors, more business majors
- MSIs have a higher percentage of Black students
- MSI students are less likely to have AP economics
- PWIs serve more higher-income families

Role models

- MSIs have more minority identifying faculty (44% at MSIs, 21% at PWIs)
- URM guest speakers (20% MSIs vs. 13% PWIs)

Different pedagogy

- Online/hybrid classes more common at MSIs
- Anti-racist pedagogies are less common at MSIs (21% PWI, 13% MSI)

Descriptive Results - Institution characteristics

Women's vs. co-ed

Serve

- Women's colleges have fewer math and business majors than do co-ed institutions
- Women's college have more students majoring in other social sciences compared to co-ed

Role models

- Women's colleges have more female faculty (67% women's vs. 29% co-ed)
- Female guest speakers (46% women's vs. 2% co-ed)

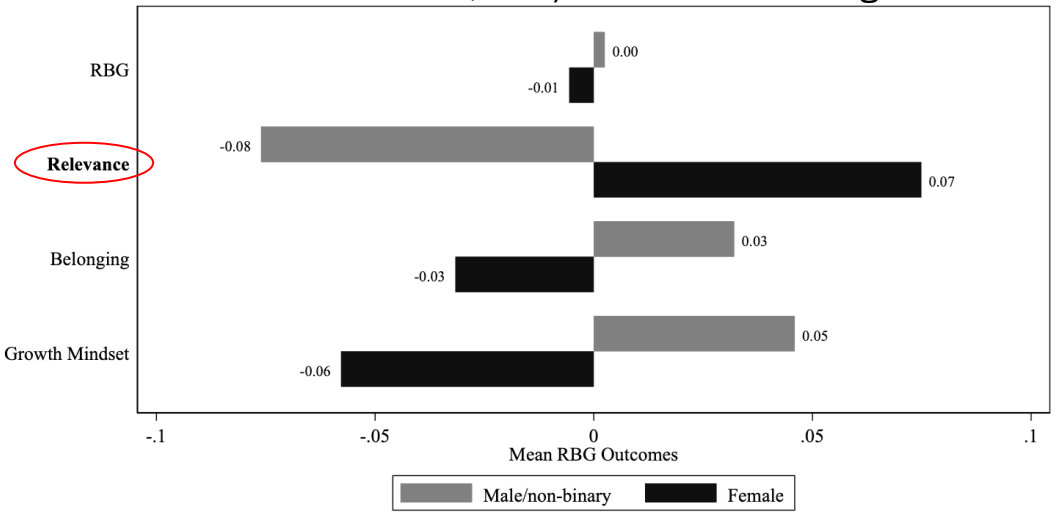
Different pedagogy

- Peer instruction (65% women's vs. 13% co-ed)
- Feminist theory (26% women's vs. 2% co-ed).

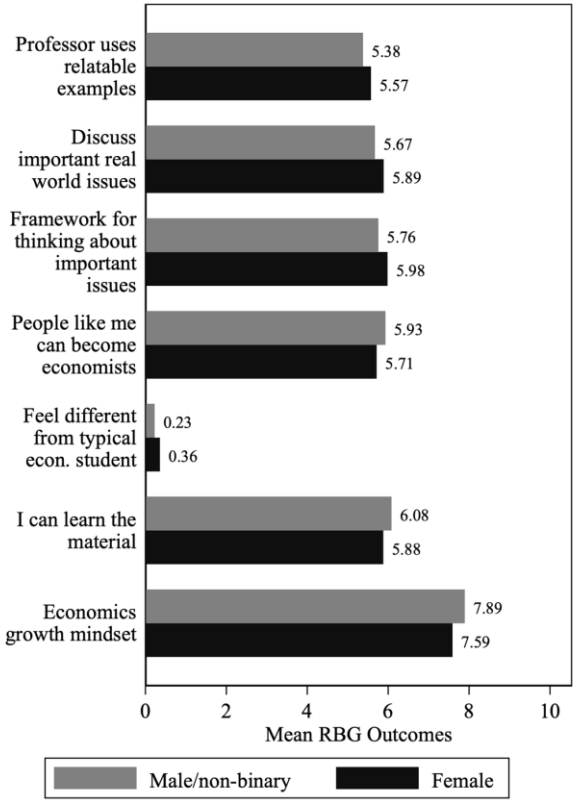
Mean RBG outcomes by gender identity

- Female students higher relevance factor (0.15 SDs), no sig. differences other factors
  - Relevance driven by (over-represented) women's colleges
- Female students less likely to report "people like me can become economists" and more likely to feel different than the typical student
- Female students had lower economics growth mindset, belief they can learn the material

Standardized RBG factors, bold/red circle if stat. sig. differences



RBG items with stat. sig. differences

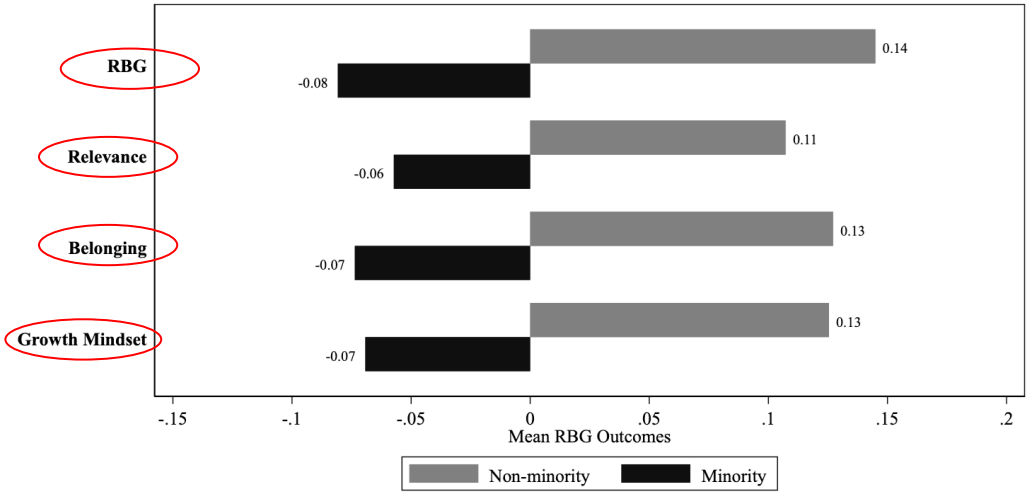


Items on 7-point scale of agreement except feel different (proportion) and economics growth mindset (10-point scale)

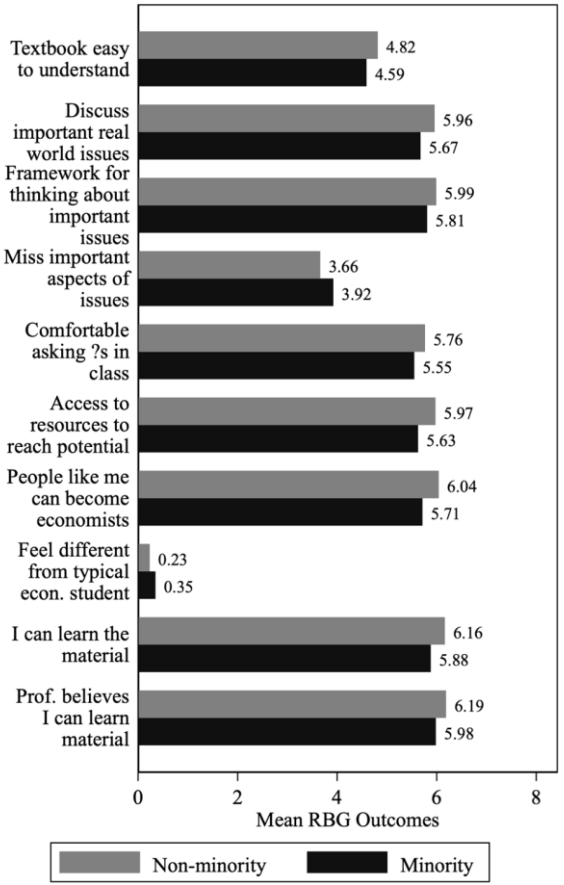
Mean RBG outcomes by minority identity

- Minority students lower RBG, relevance, belonging, and growth mindset factors (~.2 SD difference, all stat. sig.)
- Stat. sig. differences on a number of items
  - Textbook ease and issue relevance
  - Comfortable asking questions, “people like me can become economists,” feeling different
  - Own and prof. belief can learn material

Standardized RBG factors, bold/red circle if stat. sig. differences



RBG items with stat. sig. differences

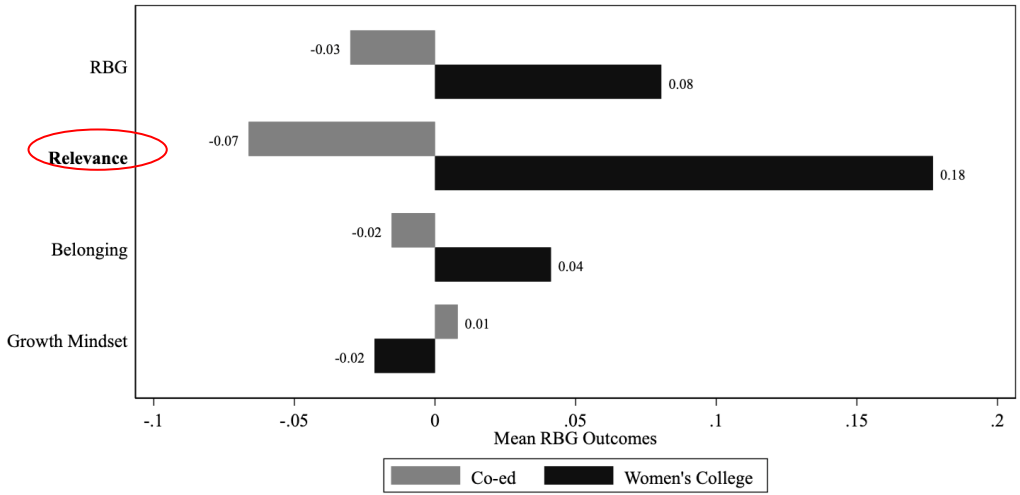


Items on 7-point scale of agreement except feel different (proportion)

Mean RBG outcomes by women's vs. co-ed

- Women's colleges stat. sig. higher relevance factor
  - Prof. examples, issues items (relevance items) sig. higher
- Sig. more likely to feel supported by tutor/TA
- Still feel different from typical econ. student,
  - But no difference in "people like me can become an economist, unlike women overall
- Sig. *higher* economics growth mindset
  - Opposite of women overall

Standardized RBG factors, bold/red circle if stat. sig. differences



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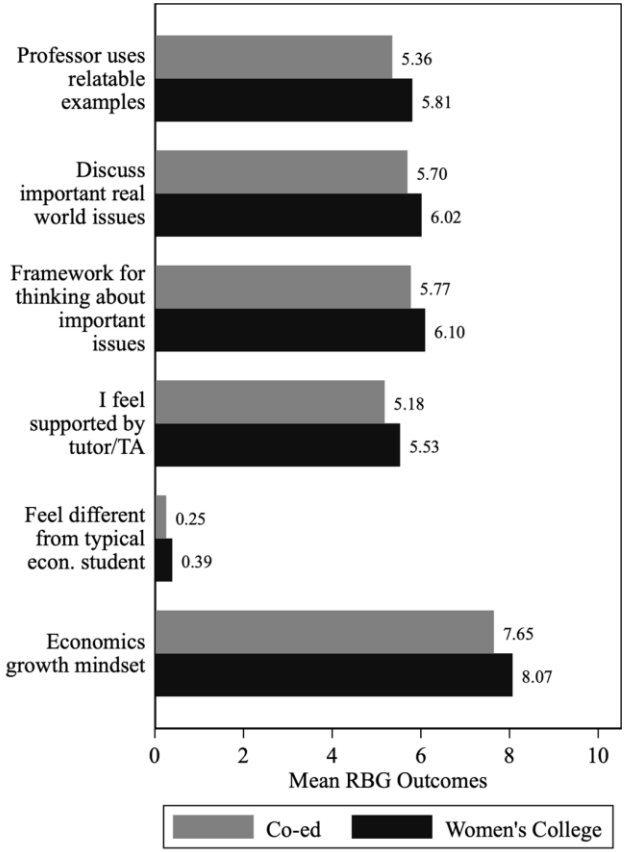
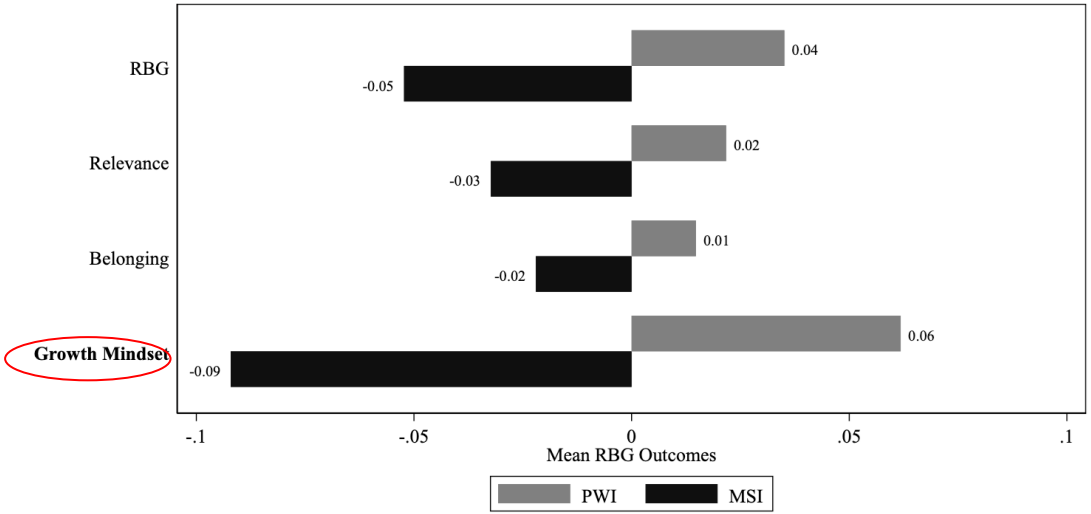


Items on 7-point scale of agreement except feel different (proportion) and economics growth mindset (10-point scale)

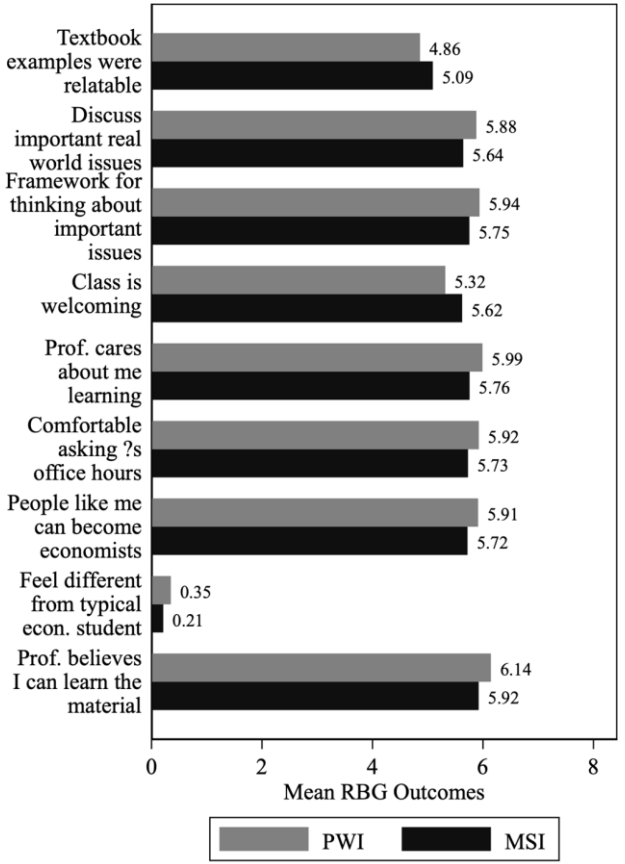
Mean RBG outcomes by MSI vs. PWI

- MSIs stat. sig. difference (lower) for factors only for growth mindset
- MSIs stat. sig. item differences
  - *More* relatable textbooks, *more* welcoming
  - Worse on issues (as with minority-identifying students)
  - Lower perception of prof. caring, comfort in office hours, prof. belief in learning
  - Less likely to believe “people like me can become economists”, more likely to feel different

Standardized RBG factors, bold/red circle if stat. sig. differences



RBG items with stat. sig. differences



Items on 7-point scale of agreement except feel different (proportion)

Disaggregated RBG Racial Differences

- Asian/Native Hawaiian/Pacific Islander (ANP) students had significantly lower overall RBG, driven by lower belonging (across several components) and growth mindset
- Black/African American (BAA) students did not have significantly different R, B or G factors from those who are not BAA
- BAA students had greater growth mindset for specific topics such as economics, math, business and writing, as well as intelligence

RBG Differences At Identity-Focused Institutions

- Female students at women's colleges reported greater relevance, welcoming class environments, and feeling supported by the teaching assistant than did female students at co-ed institutions, but are more likely to feel different from the typical economics student

- Minority-identifying students at MSIs are more likely to find textbook examples relatable, less likely to feel that important aspects of issues are missed, and less likely to feel different from a typical econ student

- There are stronger discipline-specific growth mindsets for minority students at MSIs and for female students at women's colleges

Multivariate Regression Results

- In multivariate regressions including controls (spec. 2), only some results remain statistically significant, perhaps because of small numbers in some subgroups
- Minority-identifying students
  - At women's colleges experience significantly lower relevance
  - At MSIs, significantly lower "people like me can become economists" for minority-identifying students
- Female students
  - Sig. less likely to agree that "people like me can become economists" in pooled model
    - Adding interaction of race and gender shows this is stronger for minority-identifying women at women's colleges
- Higher household income ($250,000+) is associated with higher levels of RBG overall (pooled sample, MSIs, and women's colleges)
  - Higher likelihood of believing that "people like me can become economists" at MSIs
  - Higher belief that "the professor believes I can learn this material" at all types of institutions except women's colleges

Discussion and conclusion

- This work expands upon previous work on RBG in economics
  - Broader range of institutions
    - Results from institutions serving a high percentage of students from higher-income households may not be more broadly representative
    - Key for achieving change at scale is understanding and increasing inclusion at the institutions that educate larger numbers of women and minority-identifying students
  - Examine different experiences in economics courses for women and for minority-identifying students, separately
  - Greater disaggregation by racial identity

Discussion and conclusion

- Women's colleges seem to do a better job with relevance and belonging, but establishing a growth mindset in economics is a challenge at both types of identity-focused insitutions
- New findings:
  - Female-identifying students experience higher relevance and do not experience significantly lower RBG overall (counter to H1)
  - Minority-identifying students have lower RBG (consistent with H2)
  - Interactions between minority and gender are ambiguous (underpowered for H3)

Discussion and conclusion

- Underrepresented students are unlikely to achieve parity in RBG without structural changes in how economics departments and faculty engage with students
- Interesting and statistically significant results from comparisons and t-tests mostly disappear in multivariate regression analysis
- Unfortunately, what persists to the multivariate analysis suggests that there are lower levels of relevance for URM students and lower levels of belonging for female students and that students from higher-income households have higher levels of RBG

Practical Implications

- Creation of more women's colleges or MSIs isn't really an option
- If role models matter but women and minorities are underrepresented among academic economists, these role models may come from guest speakers, classroom examples, readings, etc.
- Adopting a wider variety of examples and more inclusive teaching techniques is likely another opportunity to enhance relevance and belonging

Limitations

- Correlation, not causation
- Non-response at the institution, faculty, and student levels
  - Our respondents may not be representative of the groups we sampled
  - Sample not intended to be nationally representative
- Some small sample sizes
  - Underpowered regression results
  - Restricted ability to disaggregate
    - Different minority racial/ethnic groups and non-binary students
    - Types of MSIs
    - Challenging comparison groups (e.g. interpreting female coefficient at women's colleges)

Future Research

- Changes in RBG by institution type
  - Planned second wave
  - Examining differences for women by institution type, differences for minority-identifying students by institution type
- Income and RBG
  - Often higher RBG for higher income students
- Do differences in RBG start in high school?
  - Analyze by previous economics coursework
- Creation of more women's colleges or MSIs isn't really an option
- If role models matter but women and minorities are underrepresented among academic economists, these role models may come from guest speakers, classroom examples, readings, etc.
- Adopting a wider variety of examples and more inclusive teaching techniques is likely another opportunity to enhance relevance and belonging

Thank you!

Questions and comments?