Race and Ethnicity Congruence in Math Courses: Examining Long-term Postsecondary Outcomes for Students in Texas

Introduction

Serving one of the most diverse student populations with one of the most diverse teacher labor markets in the U.S. (Edwards, 2020), we take a closer look at the role of student-teacher race and ethnicity congruence in middle school and high school math courses on advanced math course-taking and postsecondary outcomes. We examined how student-teacher race and ethnicity congruence in math courses links to short- and long-run math and STEM outcomes for the 2011-12, 2012-13, and 2013-14 cohorts in Texas public schools.

Faculty Voice

I have been so **impressed** by the quality of my Texas Tech undergraduate researchers! We were not exactly sure what to expect when we started recruiting **math majors** to work on **education policy research** projects, but Eli and Andras have been a wonderful addition to my research lab!

--Dr. Jacob Kirksey

Team

Faculty: Jacob Kirksey
Students: Andras Horvath, Elijah Hand

Goals of our Project

We aimed to quantify how having a race and ethnicity congruent teacher related to advanced math course taking and postsecondary outcomes for Texas public school students. We also wanted to know if effects of having a same-race and ethnicity teacher differed based on student-level characteristics.

TEXAS TECH UNIVERSITY SYSTEM

Shared Identities: Short- and Long-Run Benefits of Demographic Representation in Middle School and High School Math Courses

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Data

Texas Education Research Center (ERC)
- ERCs provide researchers with access to the cradle to workforce longitudinal data, allowing us to connect students in K-12 public schools to public institutions of higher education
- Our sample is restricted to the N = 643,830 Texas public school students who were in the 9th grade between 2011-12 and 2013-14 with complete, non-missing data
   - We limit to these years for two reasons: 1) these are the cohorts that were unaffected by House Bill 5, which changed high school graduation plans, and 2) These students had enough time to make it into postsecondary
- Typical math course sequence:
   - Algebra 1 > Geometry > Algebra 2 > Other

Student Voice

"My experience was nothing short of amazing. The incredible people who I met and the knowledge/skills which I gained were **invaluable**. This experience played a large role in my decision to continue to **pursue a graduate degree**, and I hope to use all these skills gained in the future in a job analyzing large data."

-- Undergraduate, Andras Horvath

To Date Progress

We have a working paper with results from our study. We plan to submit this manuscript to a high-impact journal in education policy. We also presented this paper at two major conferences in education: the annual conferences of the American Educational Research Association and the Association for Education Finance and Policy.

In terms of results, our study suggests that race and ethnicity congruence has positive returns for Black and Latinx students in math courses. Specifically, Black and Latinx students are more likely to pass math courses in which they have a race and ethnicity congruent teacher, and they are also more likely to enroll in a higher math course the following year. Black and Latinx students were more likely to enroll in a math AP or IB honors course, complete more math credits, and complete more math college credits if they had a race and ethnicity congruent teacher.

For postsecondary outcomes, our results suggest that Black and Latinx students exhibit better college-going rates if they had at least one race or ethnicity congruent math teacher, and they were more likely to declare a STEM/math major in college.

Lastly, we examine how having more than one race or ethnicity congruent math teacher relates to college outcomes. We show that Black and Latinx students with greater exposure to race and ethnicity congruent math teachers were more likely to enroll in a 4-year college and declare a STEM major.

TᵣUE Transformers
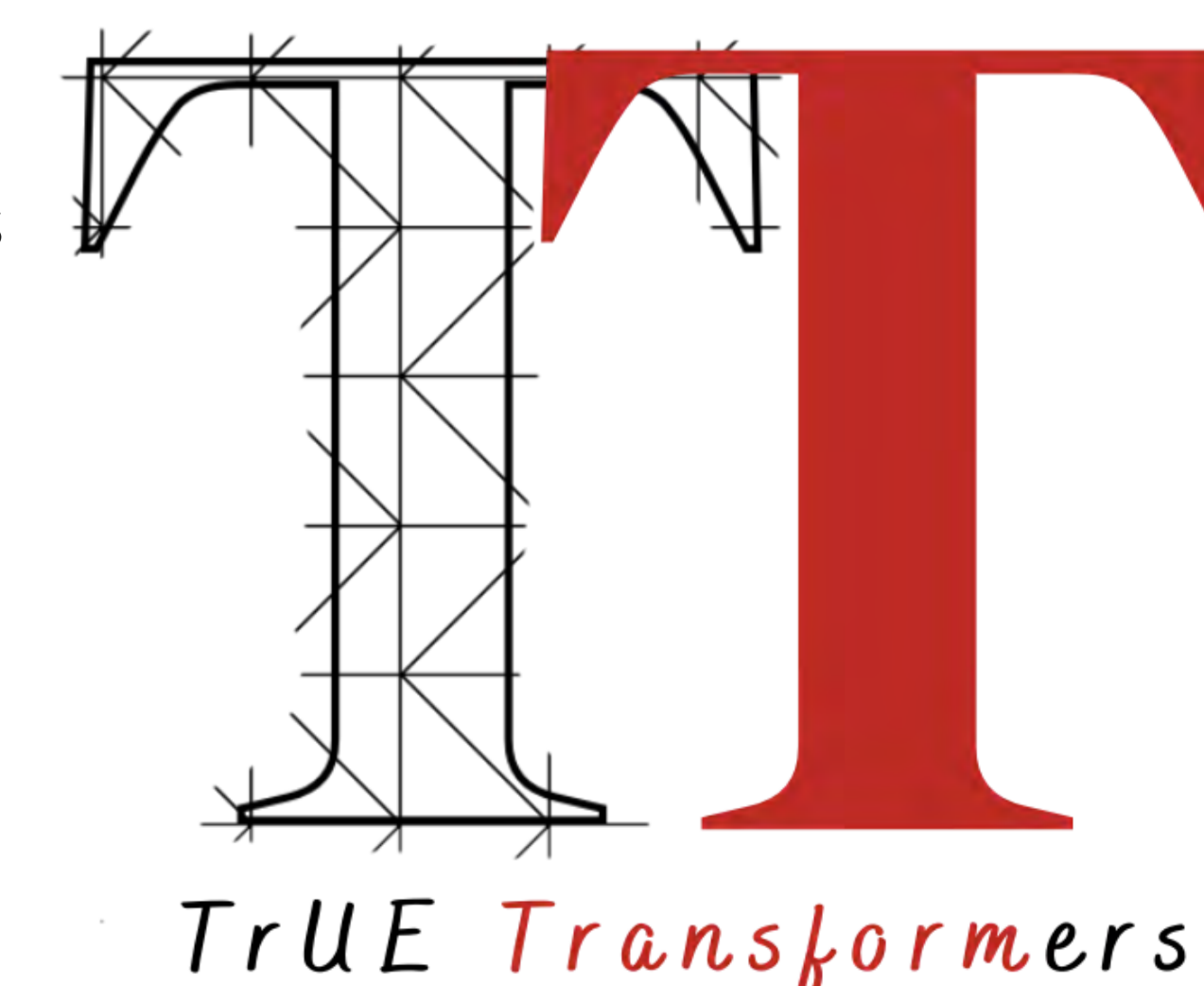
My Top 3 Transformative Priorities

Strong Potential for Institutionalization

Leveraged Existing Support

Incorporated Community-Based Component