Gender Differences in Remote Learning amid COVID-19: Disruptive Peers and Self-Control

Sungmee Kim
Georgia State University

Abstract

A shift to remote and blended learning following pandemic-induced school closures changed the nature of the learning environment for students, leading to changes in the relative importance of educational inputs and their disproportionate impacts on student outcomes by race/ethnicity, gender, and socio-economic status.

In this paper, I explore another dimension of achievement growth differences during the pandemic, student gender. I employ the Blinder-Oaxaca decomposition method to examine how changes in exposure to disruptive peers and gender-based differences in self-controlled impact student learning trajectories during the pandemic. I find that differences in students’ pre-pandemic self-control explain a moderate share of the observed gender achievement gaps. Also, math achievement gaps widened for those who remained remote, whereas there were no significant gaps for those who returned to school.

Introduction

Two years after the COVID-19 pandemic broke out, concerns over short-term and long-term impacts of learning disruption have remained prevalent among education experts. Concerns are also raised that it might have exacerbated pre-existing achievement gaps by race/ethnicity, gender, and socio-economic status.

As schools switched their learning mode from traditional face-to-face instruction to remote instruction after the pandemic broke out, the pandemic-induced school closures and the consequent shift in learning mode are believed to affect a range of educational inputs that are relevant for the process of skill formation of children.

Based on the pandemic-induced shifts in learning environment and the evidence from the existing literature, I propose two hypotheses as potential explanations for the observed gender achievement gaps in the school district I study: (i) remote instruction changed the nature of peer interactions and girls were less disrupted by their mis-behaving peers during remote learning after initial school closures in March of 2020, and (ii) girls are better at self-control, which is an essential component of success in remote learning, and thus learned more than boys did when schools were closed.

Methodology

I use administrative data of a metro-Atlanta school district and exploit the variation in the intensity of classroom disruptiveness, self-control level, and the proportion of instructional remote learning days by gender.

\[ Y_{i} = \alpha_{i} + \beta_{1} \text{female}_{i} + \beta_{2} \text{prop.rush}_{i} + \beta_{3} \text{ever.rush}_{i} + \beta_{4} \text{gender}_{i-1} + \beta_{5} \text{gender}_{i-1} + \beta_{6} \text{gender}_{i-1} + \beta_{7} \text{gender}_{i-1} + \epsilon_{i} \]

\[ \Delta Y_{i} = \gamma \cdot Y_{i} \]

Where

- \( Y_{i} \) is the achievement test score for student i,
- \( \alpha_{i} \) is the intercept,
- \( \beta_{1} \) is the coefficient on gender,
- \( \beta_{2} \) is the coefficient on the proportion of rush hour,
- \( \beta_{3} \) is the coefficient on the ever-rush indicator,
- \( \beta_{4} \) is the coefficient on the gender difference in achievement from the previous year,
- \( \beta_{5} \) is the coefficient on the gender difference in achievement from the previous year,
- \( \beta_{6} \) is the coefficient on the gender difference in achievement from the previous year,
- \( \beta_{7} \) is the coefficient on the gender difference in achievement from the previous year,
- \( \gamma \) is the impact of gender,
- \( \epsilon_{i} \) is the error term.

In order to explore the trend in the gender achievement gaps and estimate the change in the magnitude of impacts of exposure to disruptive peers and self-control level across gender over the course of the pandemic, I apply the Blinder-Oaxaca decomposition method. I investigate whether changes in gender achievement gaps during the pandemic-induced remote learning stemmed from the two mechanisms of interest. To overcome potential selection bias resulting from parental choice of learning mode for their kids in the Fall of SY 2020-21, I use Two-Stage Least Squares (2SLS) method and employ instrumental variables.

Results

Analyses during pre-pandemic in-person instruction (not presented in this poster) indicate that being exposed to historically disruptive peers and a lack of personal control negatively affect student achievement and that girls are disproportionately negatively impacted by lacking self-control, compared to boys.

Main analyses results suggest that disruptive peers and self-control continue to be significant determinants of student achievement over the course of the pandemic, and students’ pre-pandemic self-control level can explain a moderate share of the observed gender achievement gaps where the gaps favor female students. Moreover, I find large gender achievement gaps in math for those who stayed remote between the fall and winter exams of SY 2020-21, whereas no statistically significant gender gaps were found among those returned to school.

Discussion & Conclusions

The COVID-19 pandemic and the school closures has undoubtedly affected many aspects of people’s lives. Especially for students, the pandemic-induced shift to remote learning has unprecedentedly altered the nature of their learning environment. Since the initial onset of the pandemic, remote learning has received great attention and the importance of self-regulated learning has been stressed ever before.

Accumulating evidence on disproportionate impact of the pandemic-induced remote learning by gender as well as race/ethnicity and SES raise serious concerns and questions on how best to provide targeted, needed support for distinct student subgroups.

Contact

Sungmee Kim
Georgia State University
Email: skim227@gsu.edu
Website: sungmeekim.com
Phone: 470-717-5120

References