

# The Effects of Peer Gender Ratios on Mental Health and Well Being

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- ➊ Rise in single-sex schools→spillover effects on the gender composition of nearby schools (Bigler and Signorella, 2011)
- ➋ School choice policies have increased in popularity→ increased gender imbalances in schools through sorting by gender into magnet and charter schools (Corcoran and Jennings, 2018; Long and Conger, 2013)
- ➌ Girls increasingly outpace boys in college enrollment→ colleges grappling with whether and how much affirmative action to exercise for boys (Baker and Bastedo, 2022; Franzese, 2007)

# Motivation

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Mental health is an especially important outcome to understand amid an ongoing mental health crisis among adolescents

- ▶ Globally, 14 percent of 10-19 year olds experience a mental health disorder (WHO, 2022)
- ▶ In the US, 29 percent of high school students report experiencing poor mental health in the past 30 days, and 20 percent report seriously considering suicide in the past year (CDC, 2023)

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- ▶ Identification: leverage idiosyncratic variation in peer gender composition across cohorts of a school using an across-cohort, within-school design

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## Main findings

1. ↑ share of girls in a cohort improves mental health for both boys and girls
2. ↑ share of girls in a cohort improves school well being for boys, no effect on girls

# Data: National Longitudinal Study of Adolescent to Adult Health (Add Health)

- ▶ School-based, nationally representative longitudinal survey of adolescents in the US who were in grades 7-12 between 1994 and 1995
  - ▶ This paper: Wave I (initial wave) surveys
- ▶ Students asked about demographic, social, familial, behavioral, psychosocial, cognitive, and health information

# Outcomes

## 1. **Center for Epidemiologic Depression Scale (CESD) score**

- ▶ Widely used clinical measure to screen for depression

## 2. **CESD depression indicator**

- ▶ Indicator variable that takes value of one if CESD score meets clinical threshold for depression and zero otherwise (Roberts et al., 1991; Fletcher, 2010)

## 3. **School well being score**

- ▶ Students are scored on how strongly they agree or disagree with statements about well being at school (e.g., happy to be at school, feel safe at school, feel close to people at school).

All outcomes: Lower value=better mental health and well being

## Empirical Strategy: Intuition

Families sort across schools non-randomly

- ⇒ Unobserved characteristics of students and/or families that are correlated with school gender ratios may also affect outcomes of interest
- ⇒ OLS estimates of the effects of gender ratios on mental health and well being will be biased

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Solution: use a within-school, across-cohort design (pioneered by Hoxby (2000))

- ▶ **Leverage quasi-random variation in gender composition across cohorts within schools**
- ▶ Intuition: differences in cohort composition *within* a school are likely driven by idiosyncratic fluctuations, as families have less knowledge and control over cohort-specific composition

# Estimation

$$Y_{isg} = \beta_0 + \beta_1 \text{ShareGirls}_{sg} + \mathbf{X}'_i \beta_2 + \mathbf{X}'_{sg} \beta_3 + \alpha_s + \alpha_g + \epsilon_{isg} \quad (1)$$

- ▶  $Y_{isg}$  = outcome for student  $i$  in school  $s$  and grade  $g$
- ▶  $\text{ShareGirls}_{sg}$  = share of students in grade  $g$  of school  $s$  who are girls
- ▶  $\mathbf{X}_i$  = student characteristics (race/ethnicity, parental education, immigration status, age, birth month, interview month)
- ▶  $\mathbf{X}_{sg}$  = school-grade cohort characteristics (cohort size, race/ethnicity, parental education, immigration status, age)
- ▶  $\alpha_s, \alpha_g$  = school and grade FEs

# A higher share of girls in a cohort improves mental health for both boys and girls

	Boys (1)	Girls (2)
<b>Panel A: CESD mental health index</b>		
Share of girls in cohort	-3.1272	-5.8474**
Mean	10.3885	12.3157
Percent change	-0.0302	-0.0474
<b>Panel B: CESD depression indicator</b>		
Share of girls in cohort	-0.1333* (0.0719)	-0.0414 (0.0824)
Mean	0.0670	0.0965
Percent change	-0.199	-0.0432
<i>N</i>	8,516	8,925
School FEs	X	X
Grade FEs	X	X

Notes: Observations are at the student level and standard errors are clustered at the school level. Percent change indicates the effects of a 10 percentage point change in the share of girls relative to the mean. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

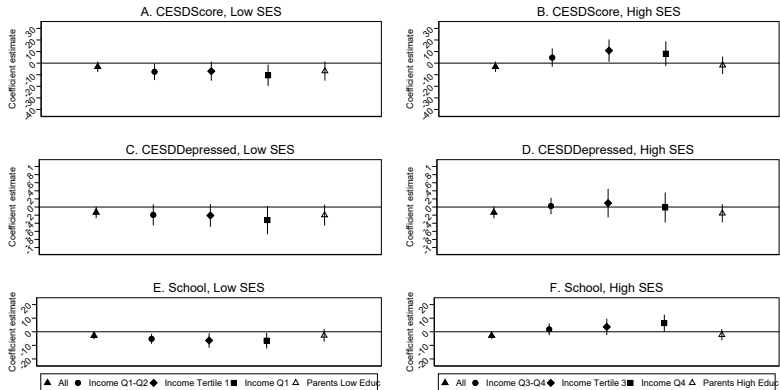
# A higher share of girls in a cohort improves school well being only for boys

	Boys (1)	Girls (2)
<b>Panel C: School well being index</b>		
Share of girls in cohort	-2.8601** (1.3106)	-0.9866 (1.5567)
Mean	14.6186	14.8145
Percent change	-0.0196	-0.0066
<i>N</i>	8,516	8,925
School FEs	X	X
Grade FEs	X	X

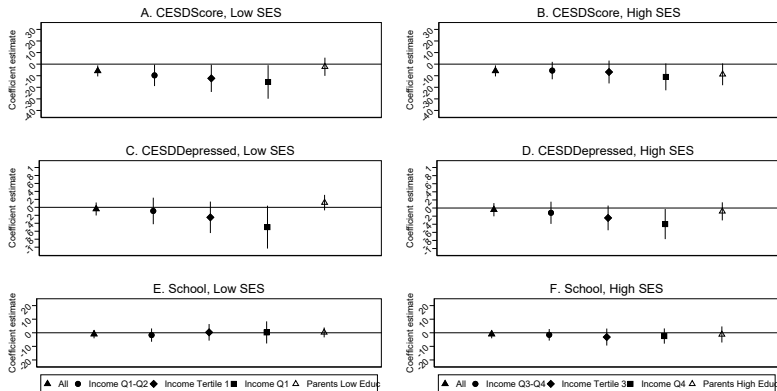
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# Positive effects of higher share girls in cohort are driven by low-SES boys



# Positive effects of higher share girls in cohort present for both high- and low-SES girls



## Additional findings

- ▶ Peer gender composition effects are fairly **constant across cohort size**
- ▶ Peer gender composition effects are **more pronounced for middle school students** compared to high school students
- ▶ **No evidence of nonlinear effects** across the distribution of peer gender composition

# Mechanisms

We explore the role of the following factors in mediating the effects of peer gender ratio on mental health:

1. Academic performance
2. Perceptions of care
3. Relationship with parents
4. Friendships
5. Self-image

Results indicate mechanisms may operate through:

- ▶ Improved self-image and better grades for girls
- ▶ Stronger friendships and relationships with adults for boys

# Conclusion

This paper examines the effects of peer gender ratios at school on mental health and well being for adolescents. We find:

1. ↑ share of girls in a cohort improves mental health for both boys and girls
2. ↑ share of girls in a cohort improves school well being for boys, with no effects on girls
3. Positive effects of a higher share of girls are most pronounced for boys from lower socioeconomic backgrounds, while girls from all backgrounds benefit
4. Effects are more pronounced for middle school students compared to high school students

Thank you!

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