

# Diversity and gender issues



4th IECHE  
The Social Responsibility of Universities  
Riyadh, Saudi Arabia, 16 April 2013

# Diversity and gender issues



**@eric\_mazur**

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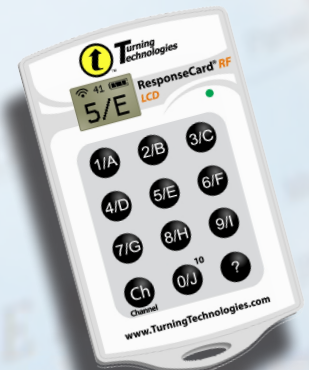
- no ON/OFF button
- only last "click" counts
- display shows recorded answer

**I am from**

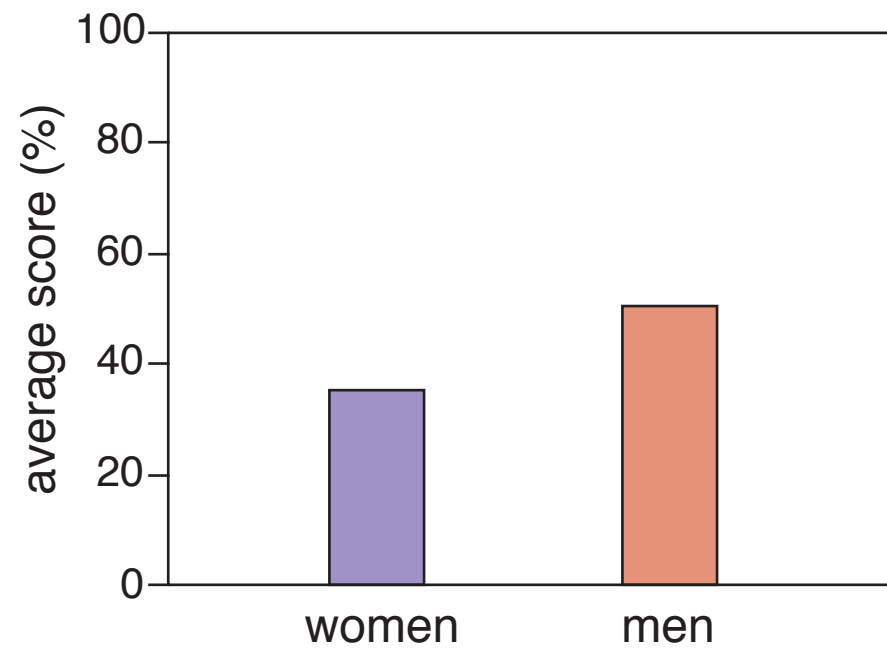
**1. Saudi Arabia**

**2. Other Middle East**

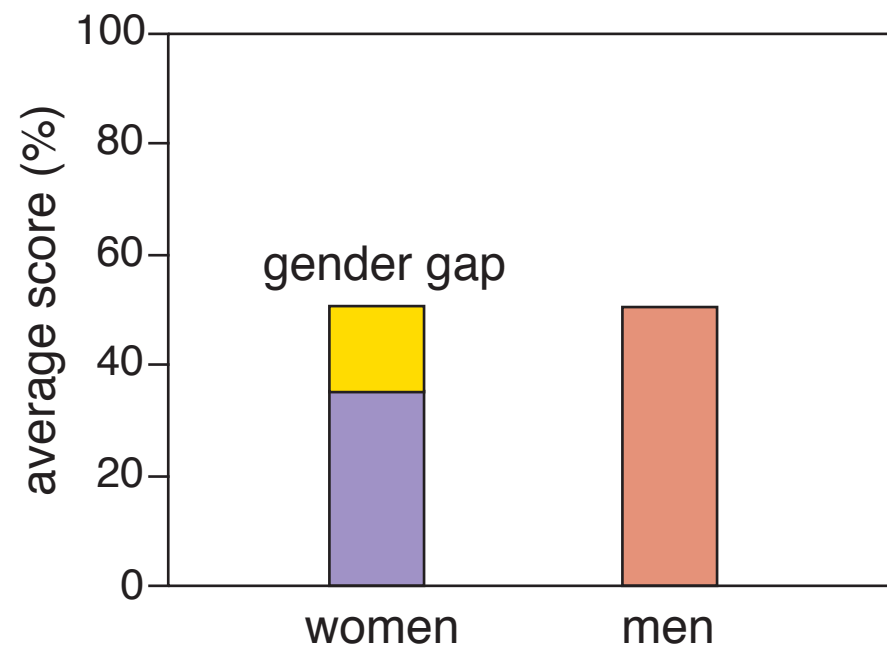
**3. Other**



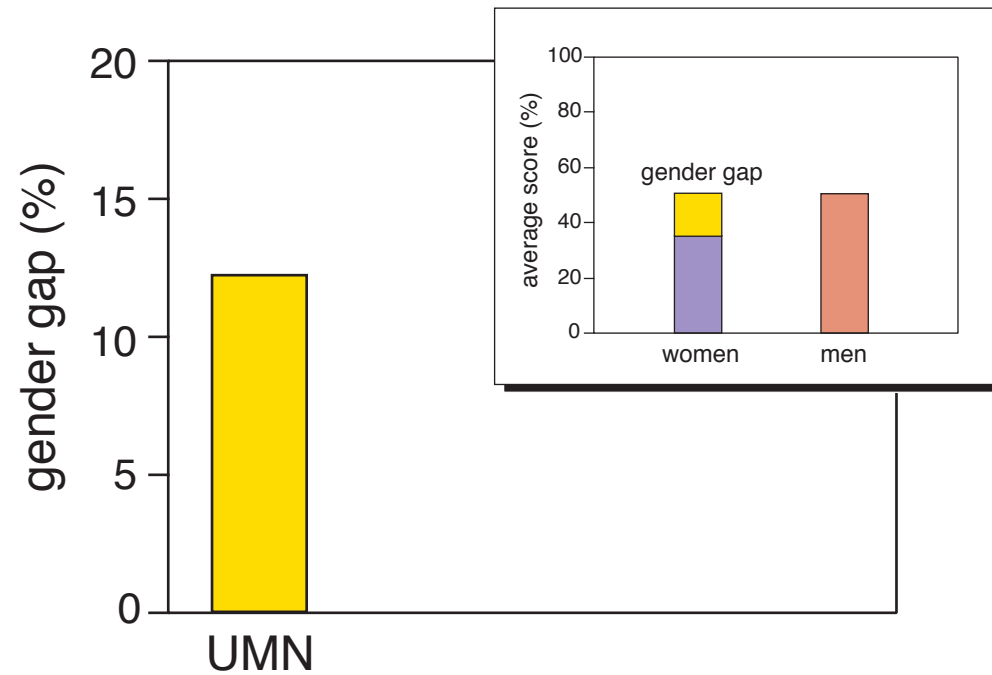
## End of semester physics scores (US)



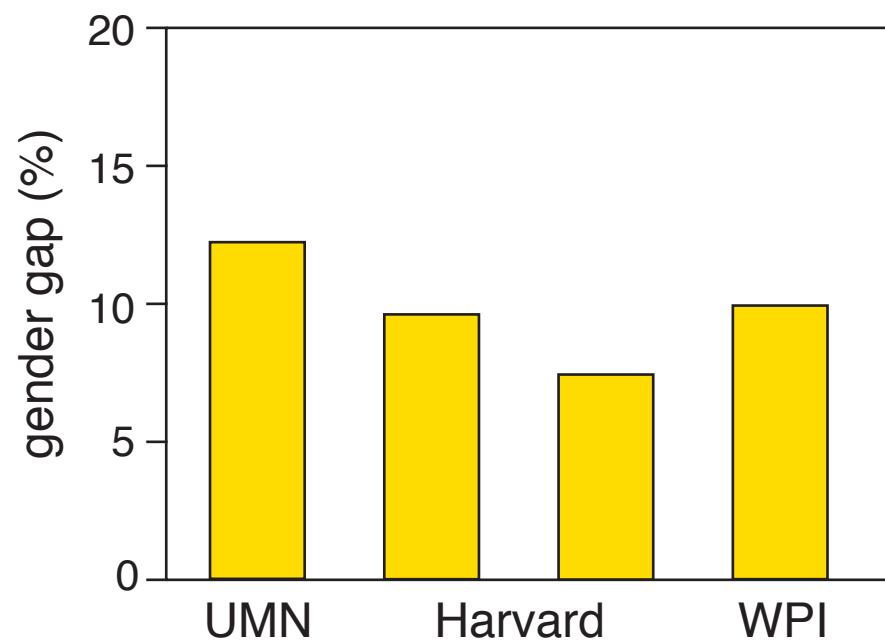
## End of semester physics scores (US)



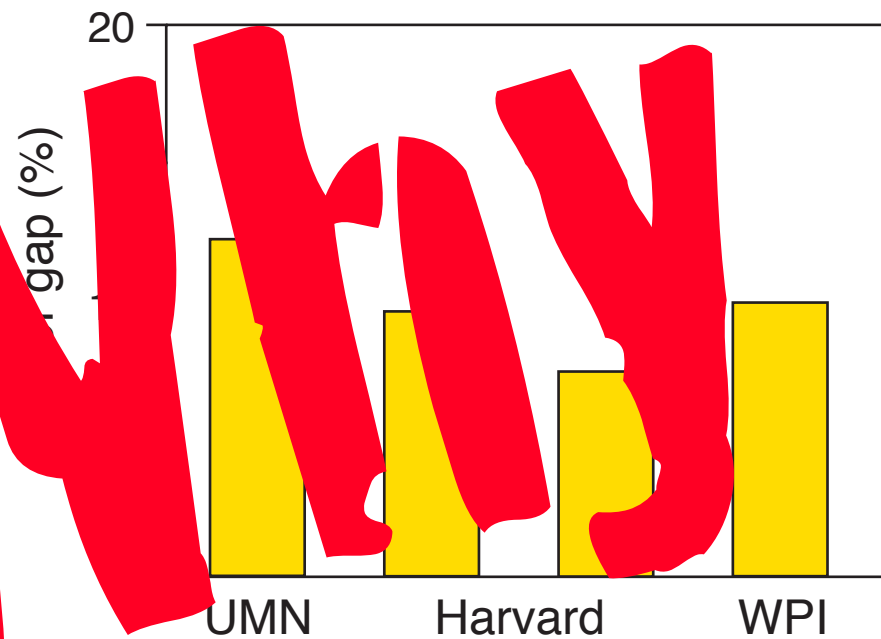
## End of semester physics scores (US)



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## End of semester physics scores (US)



**What is the cause of this gap?**

- 1. Men tend to think more logically**
- 2. It's just a cultural thing; the gap is not universal**
- 3. Differences in natural ability**
- 4. Other reason**





1 problem



1 problem

2 PI

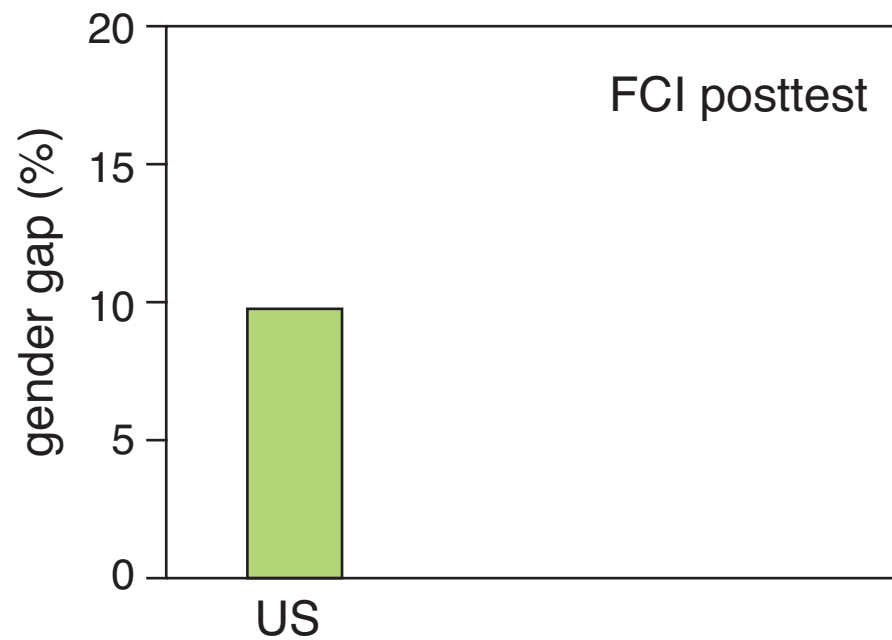


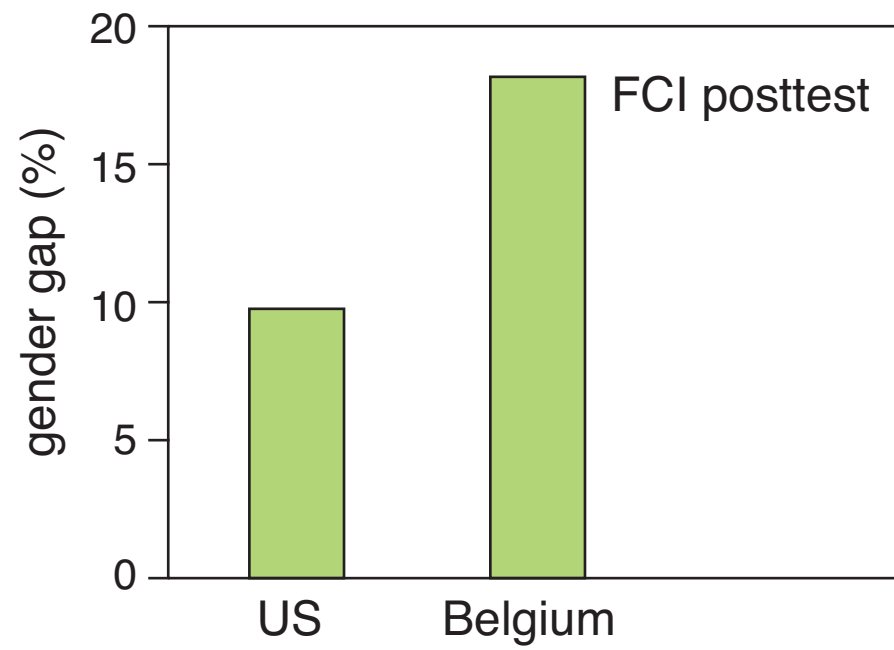
**1** problem

**2** PI

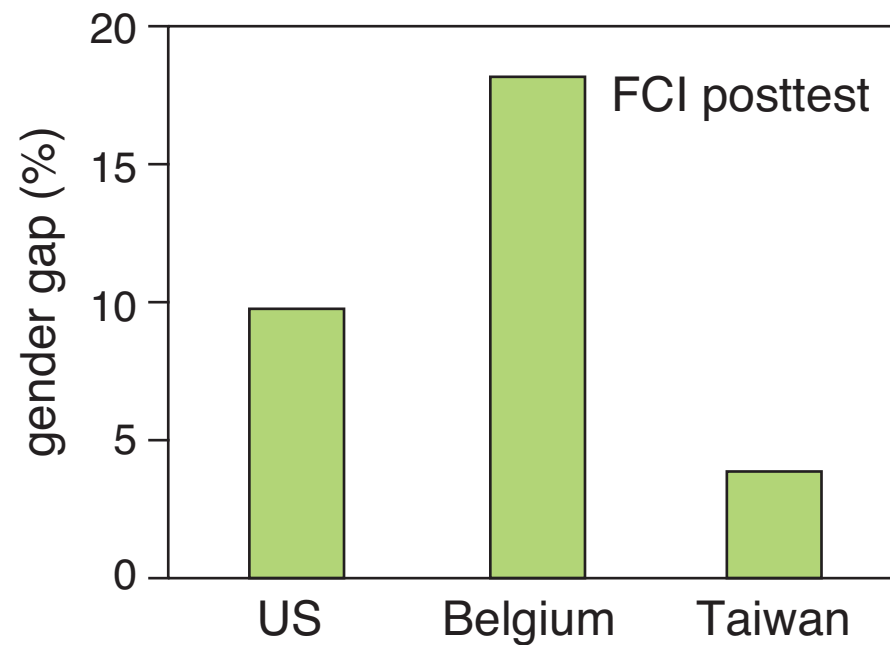
**3** solution

is it cultural?

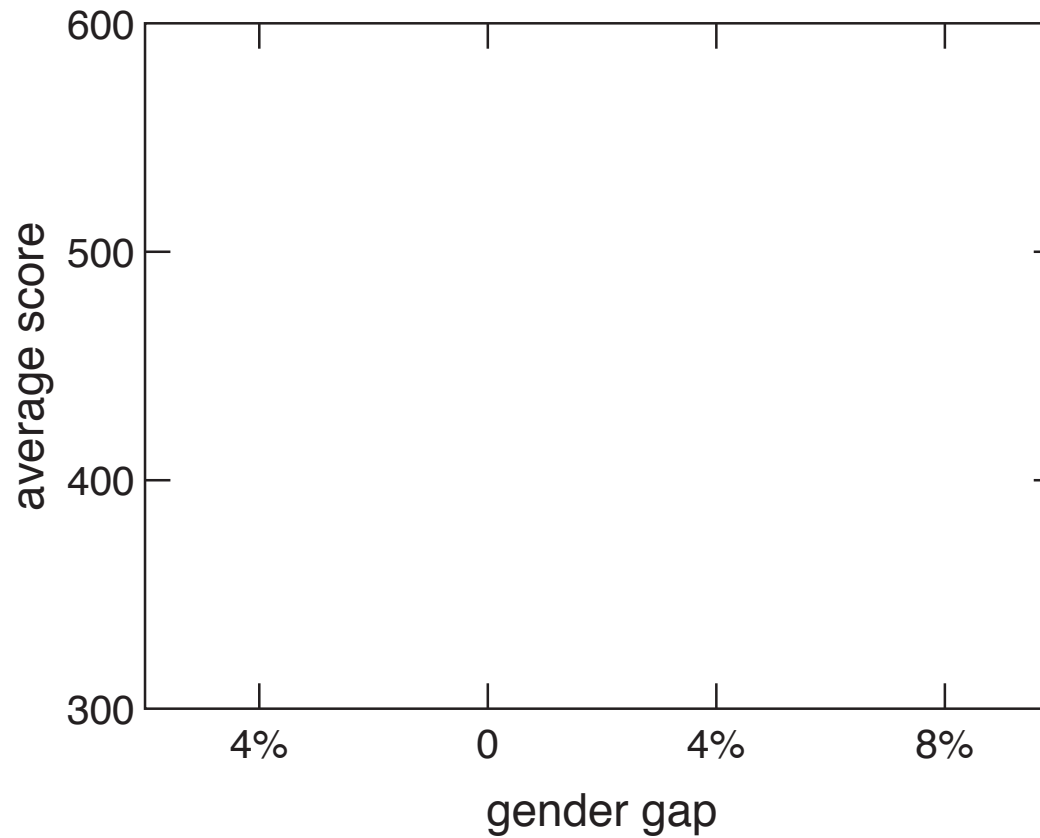




**strong dependence on culture!**

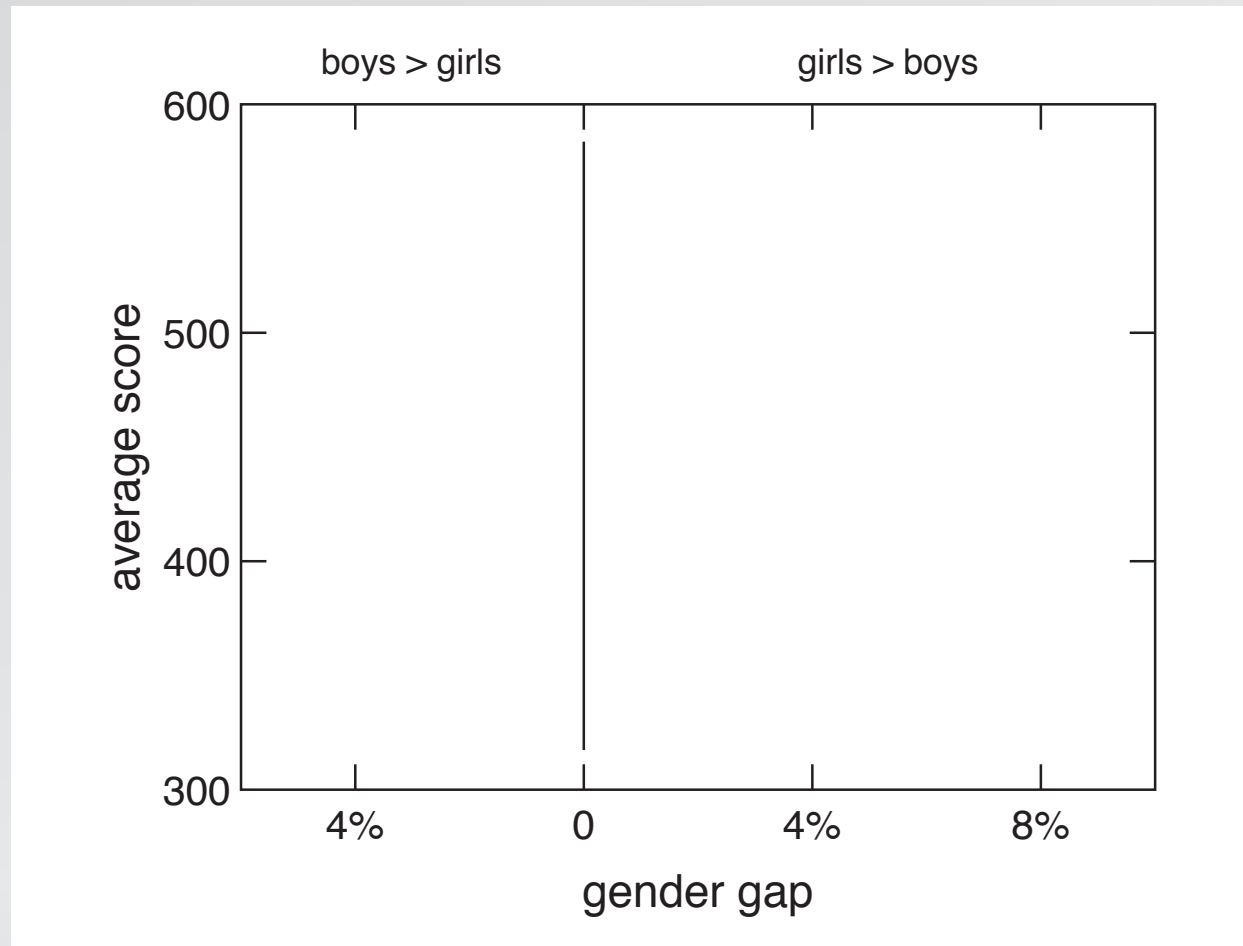


## science performance of 15-yr olds



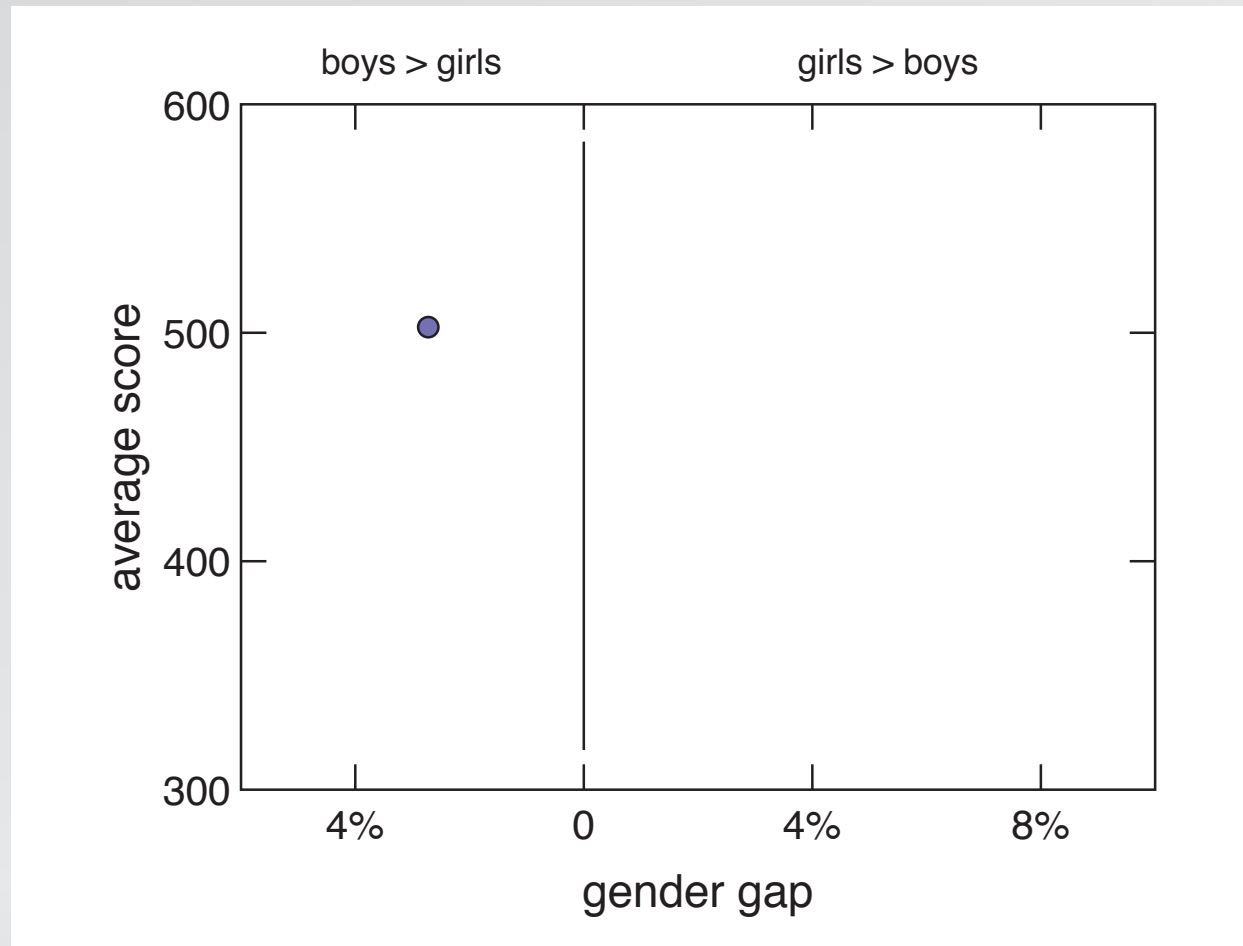
*"How do girls compare to boys in science?"* OECD (2011)

## science performance of 15-yr olds



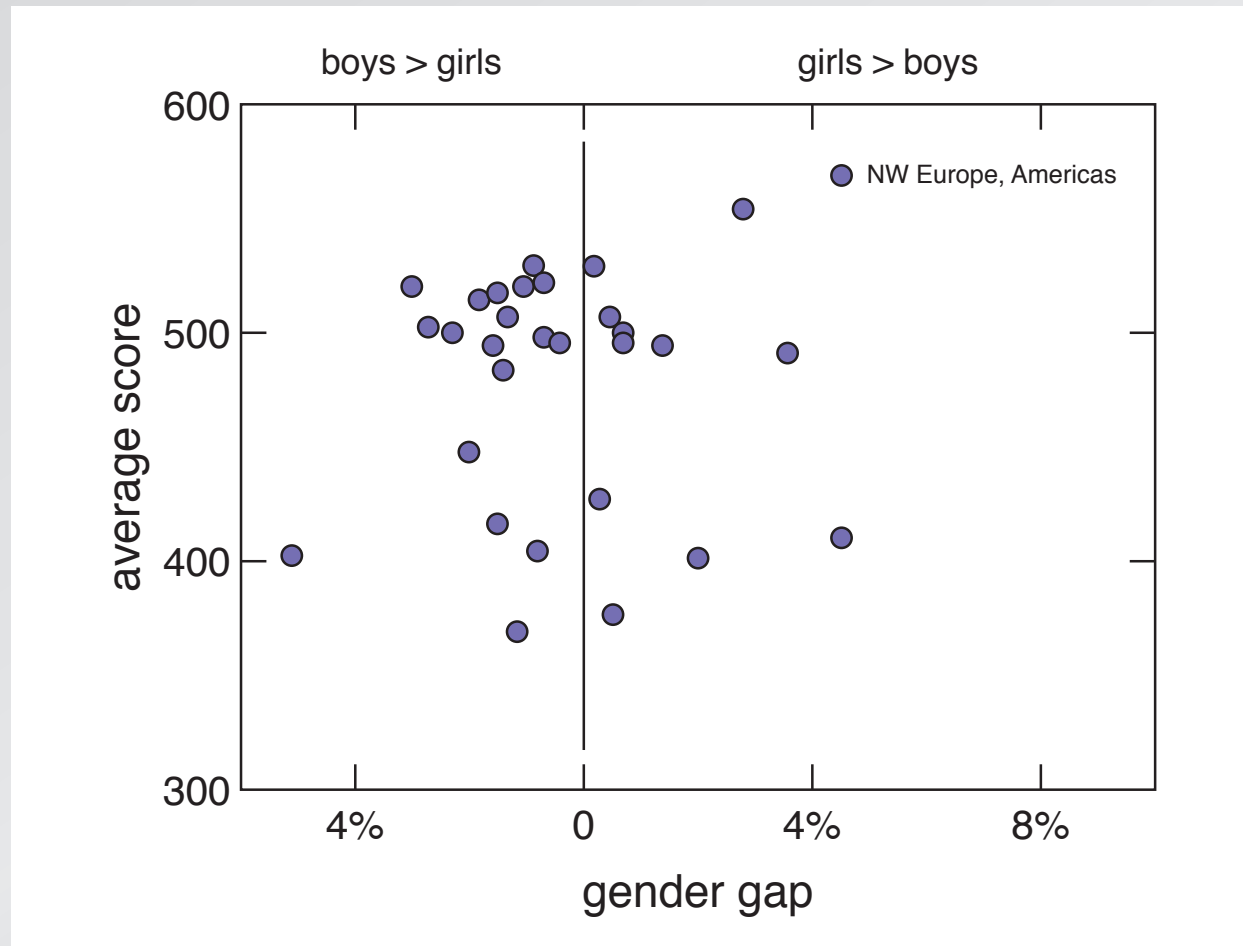
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## science performance of 15-yr olds



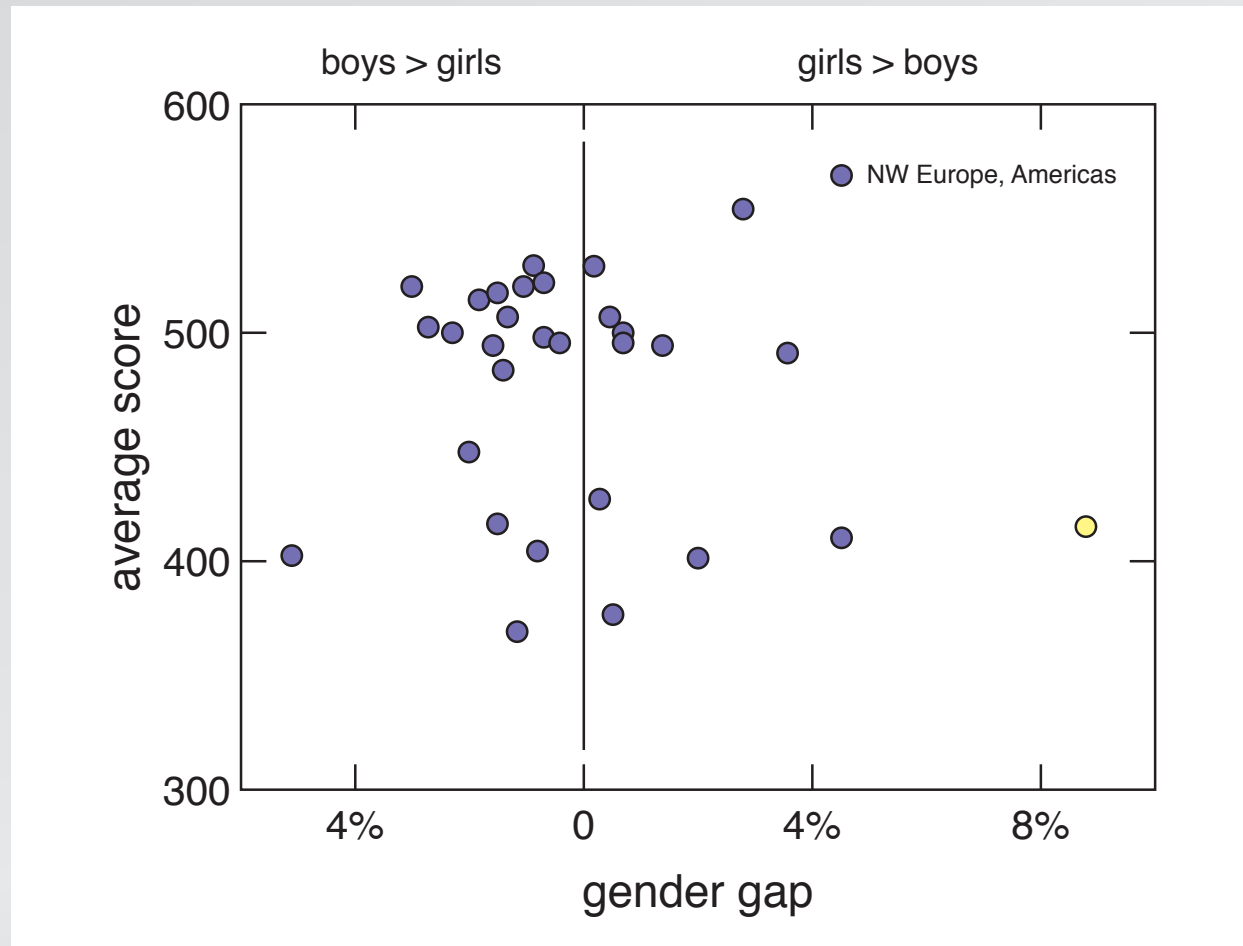
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## science performance of 15-yr olds



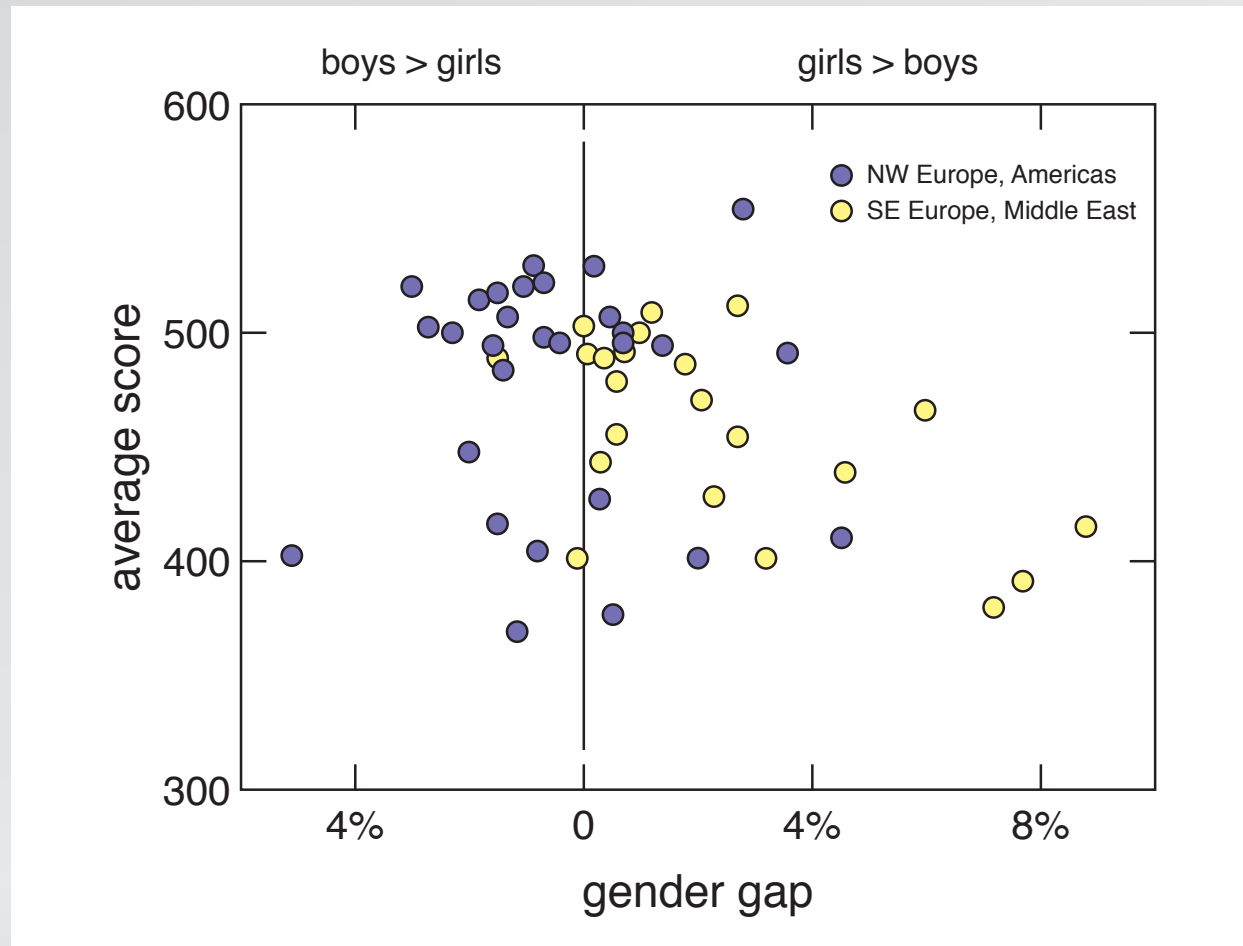
*"How do girls compare to boys in science?"* OECD (2011)

## science performance of 15-yr olds



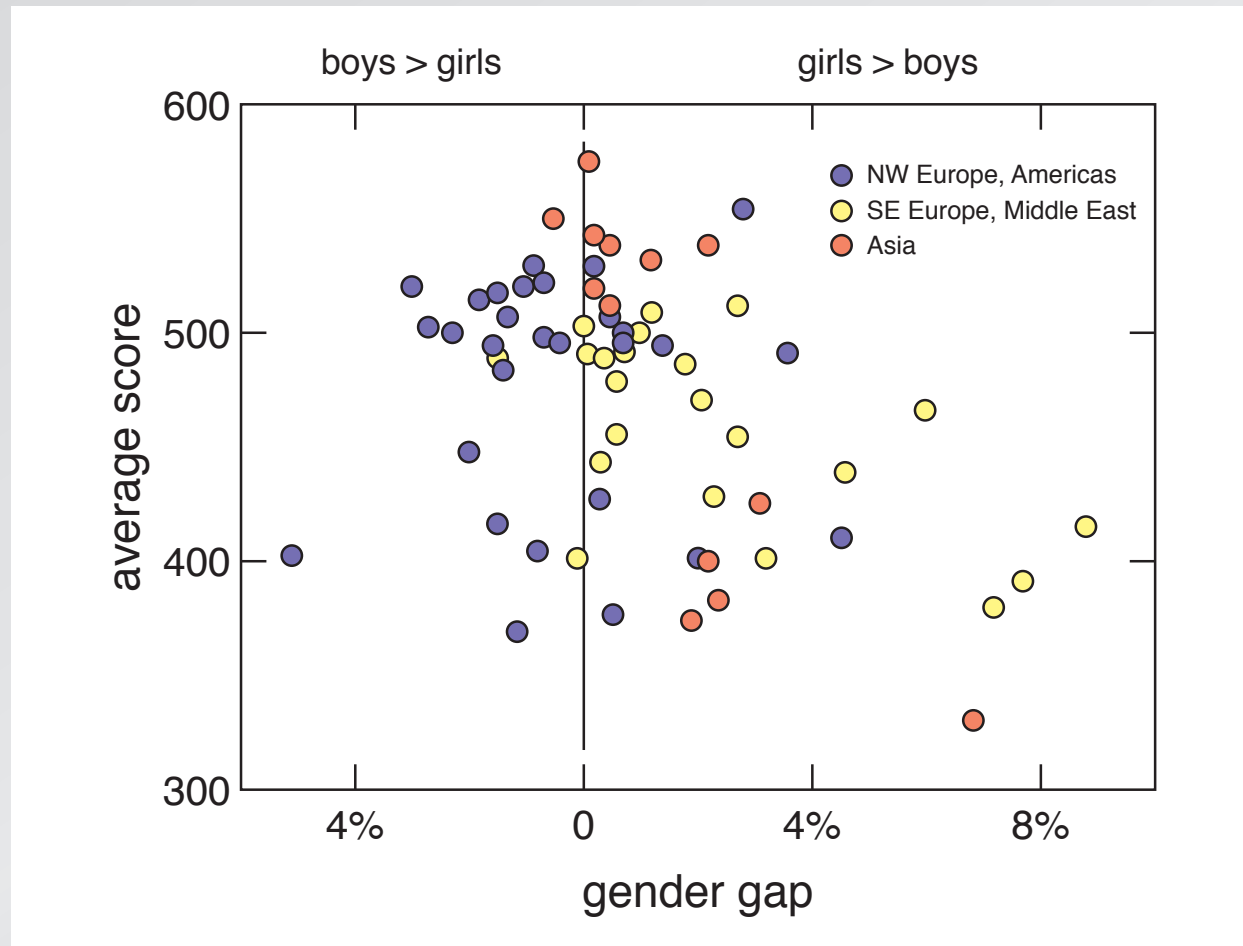
*"How do girls compare to boys in science?"* OECD (2011)

## science performance of 15-yr olds



*"How do girls compare to boys in science?"* OECD (2011)

## science performance of 15-yr olds



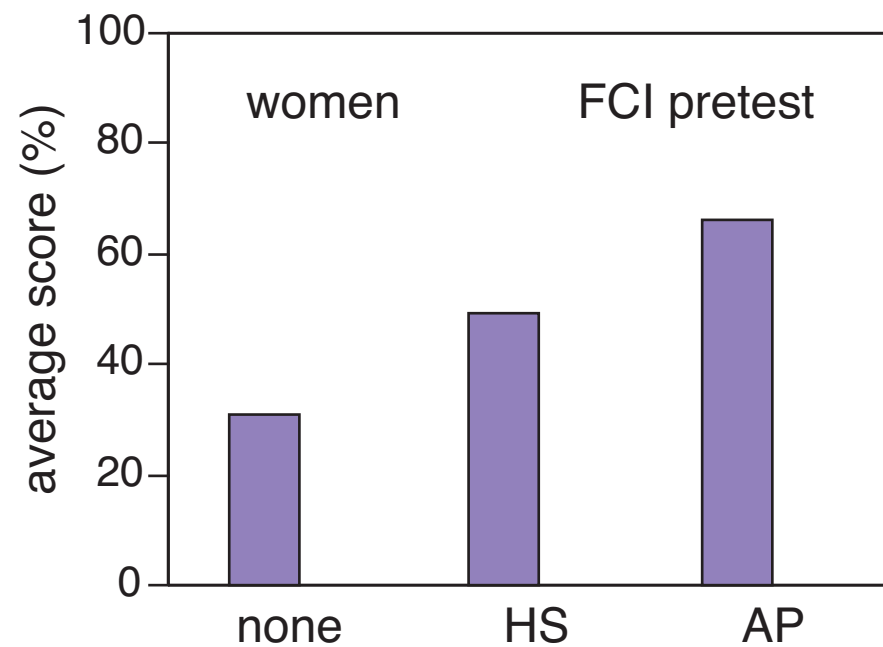
*"How do girls compare to boys in science?"* OECD (2011)

**What is the cause of this gap?**

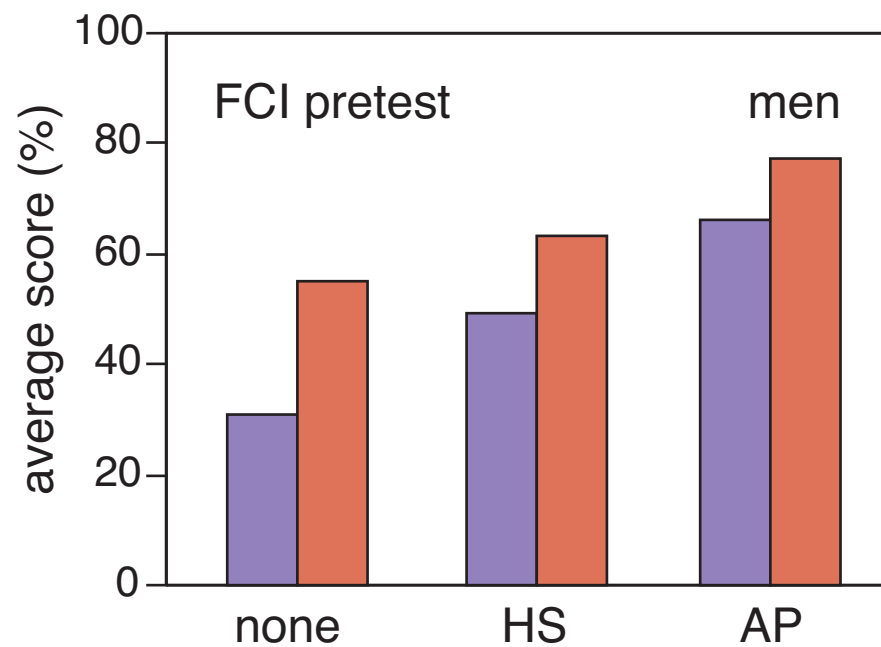
- 1. Men tend to think more logically**
- 2. It's just a cultural thing; the gap is not universal**
- 3. Differences in natural ability**
- 4. Other reason**



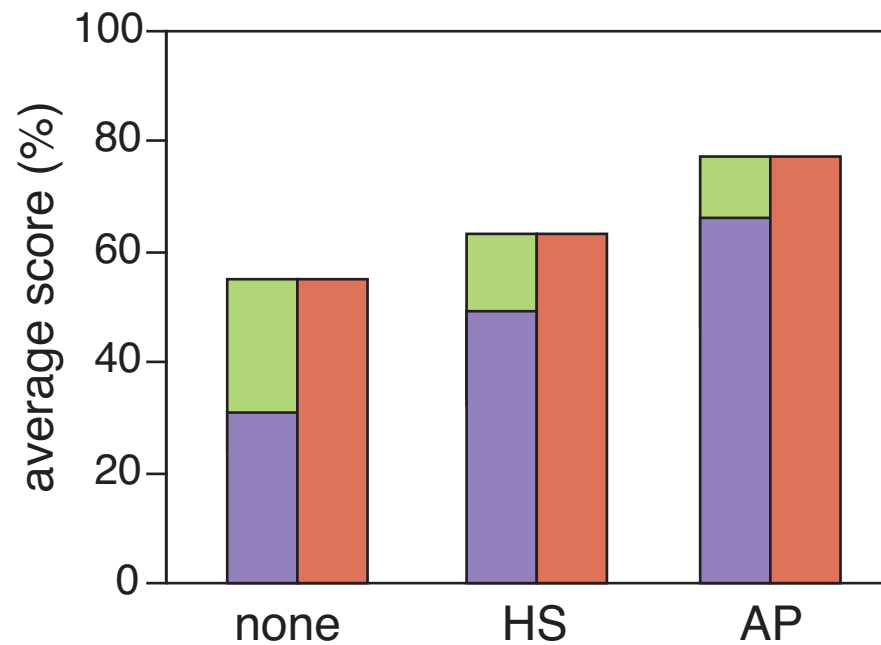
## effect of precollege education (US)



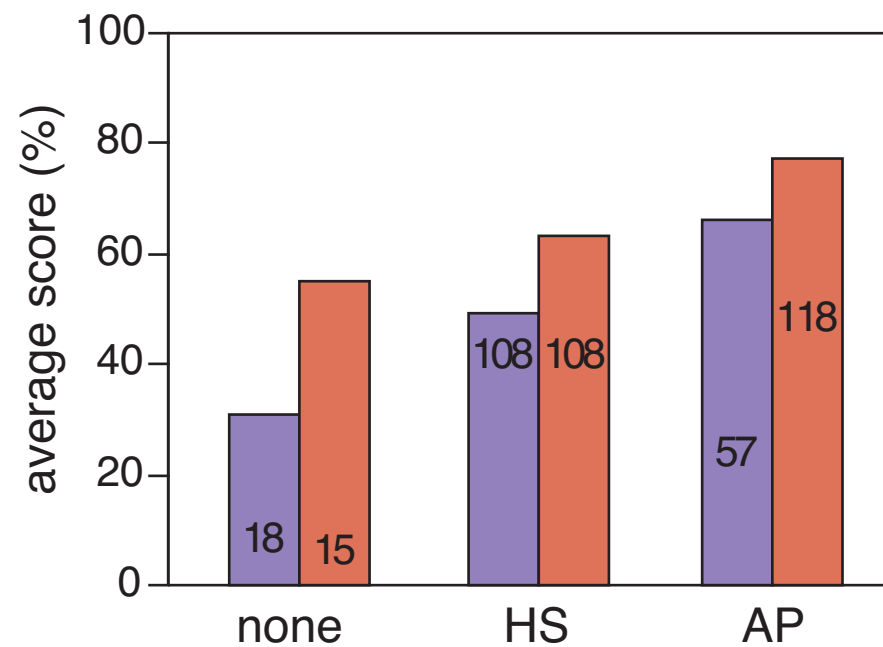
everyone gains...



...but gap persists...



...and women underrepresented



**The differences in the gender gap are caused by**


- 1. Social reinforcement of gender stereotypes**
- 2. Differences in approach to education**
- 3. Statistical fluctuations**
- 4. Differences in gender segregation in education**
- 5. Other reason**



A group of students are gathered around a table, looking at papers and discussing a problem. The text "what can we do?" is overlaid on the image.

**what can we do?**

**1** problem



**increase collaboration and interactivity?**

**1** problem

**2** PI

question

1 problem

2 PI

**question**



**think**

**1** problem

**2** PI

**question**



**think**



**poll**

**1** problem

**2** PI

**question**



**think**



**poll**



**discuss**

**1** problem

**2** PI

**question**



**think**



**poll**



**discuss**



**repoll**

**1** problem

**2** PI

**question**



**think**



**poll**



**discuss**



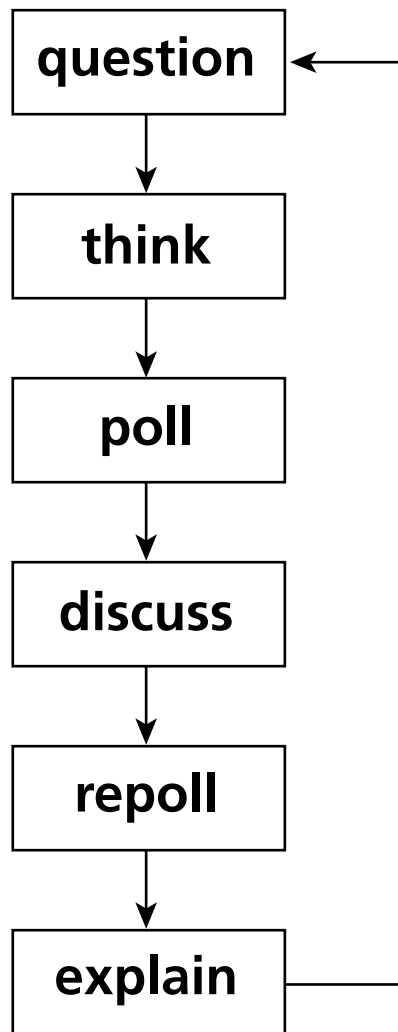
**repoll**



**explain**

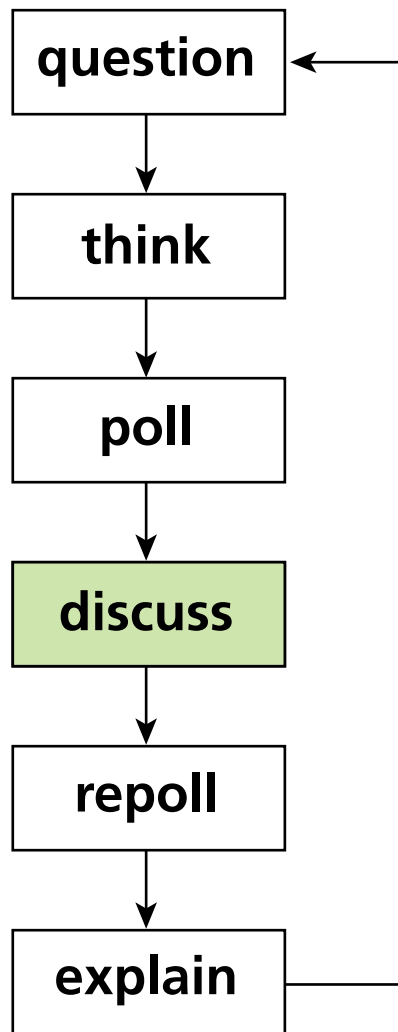
**1** problem

**2** PI



**1** problem

**2** PI



**1** problem

**2** PI

1 education

2 PI

**Compare three pedagogies:**

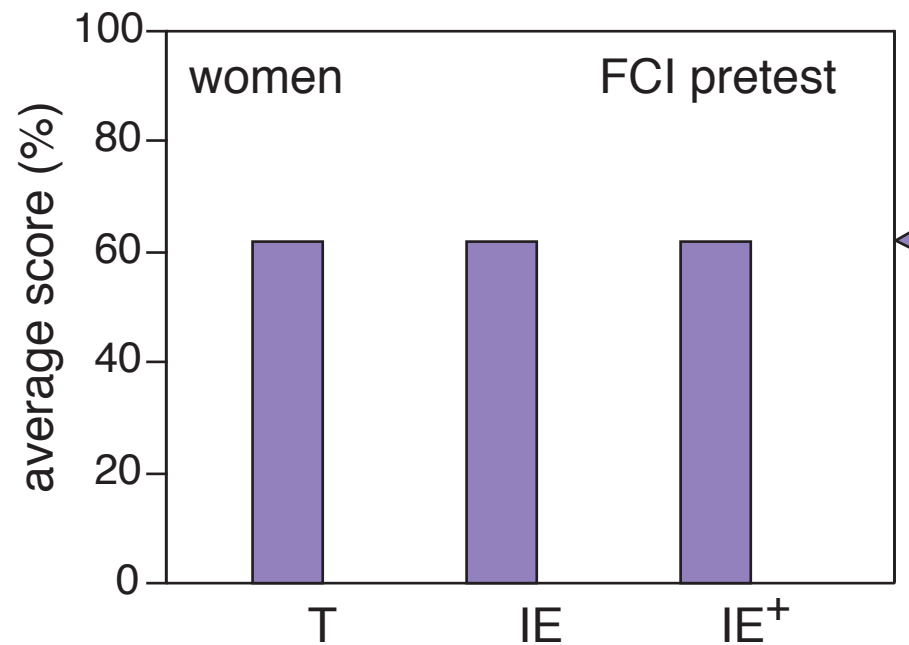
**T: traditional lectures**

**IE: interactive lectures**

**IE<sup>+</sup>: interactive assignments,  
lectures, and tutorials**



does pedagogy help?

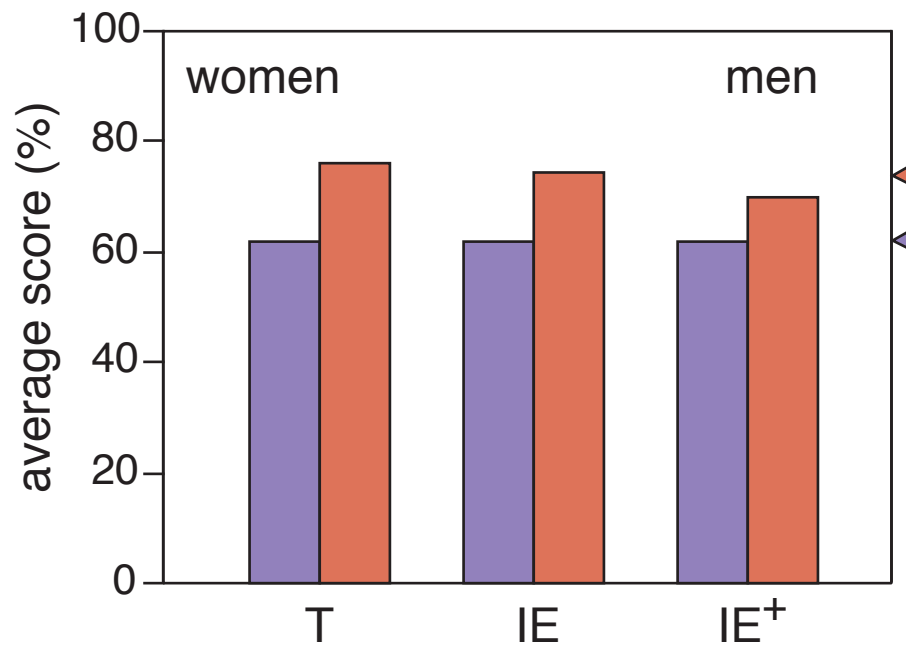


1 problem

2 PI

3 solution

does pedagogy help?

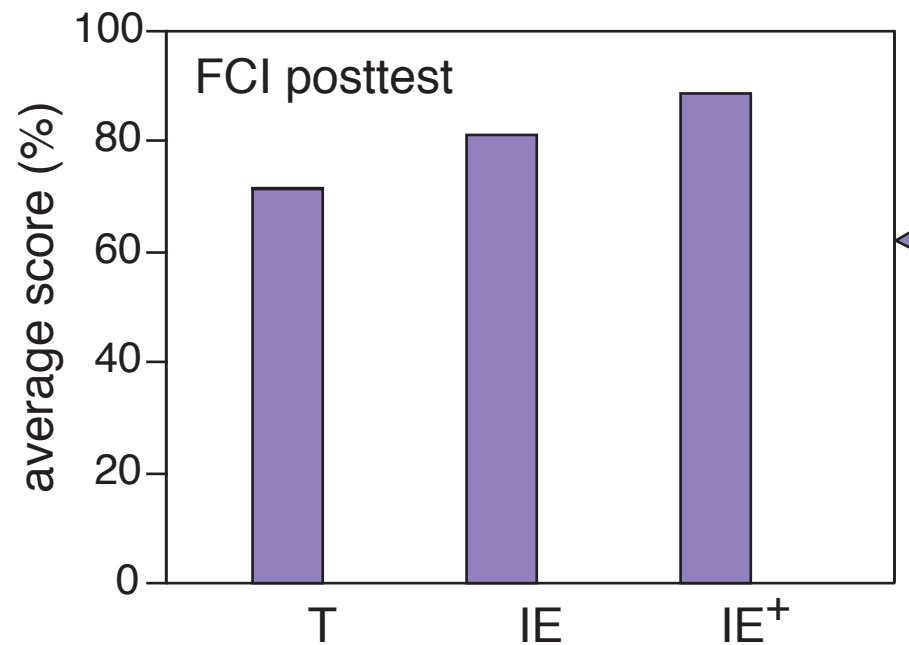


1 problem

2 PI

3 solution

does pedagogy help?

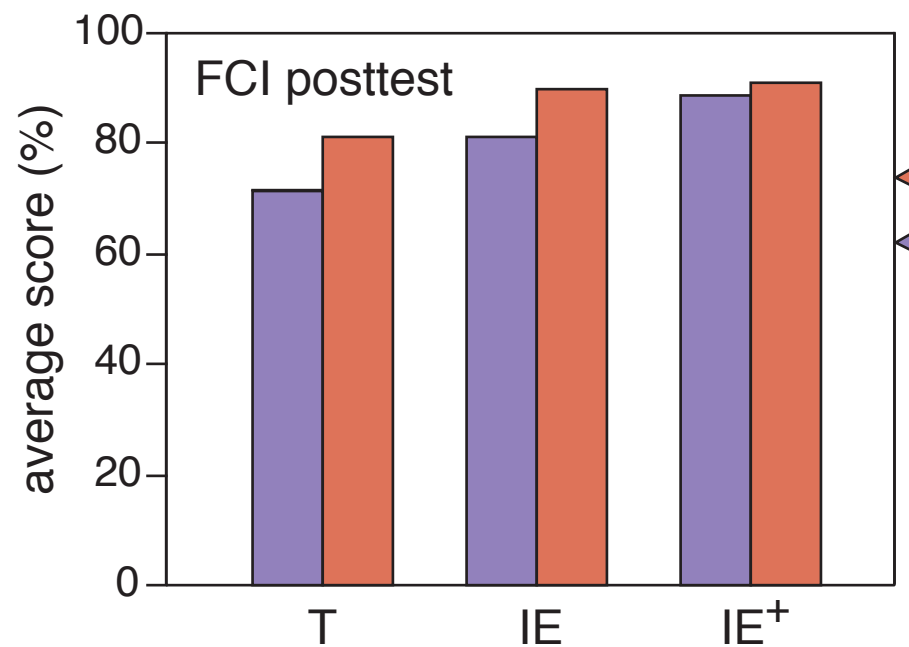


1 problem

2 PI

3 solution

**yes, pedagogy can eliminate gap!**



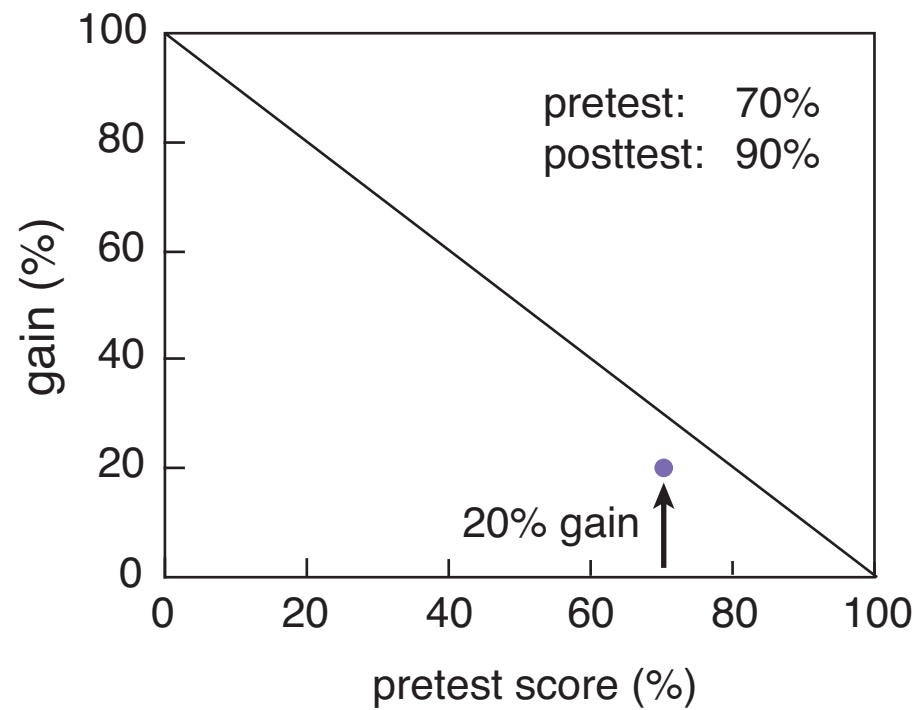
*Am. J. Phys.* 74, 118 (2006)

**1** problem

**2** PI

**3** solution

who are the low-gain students?

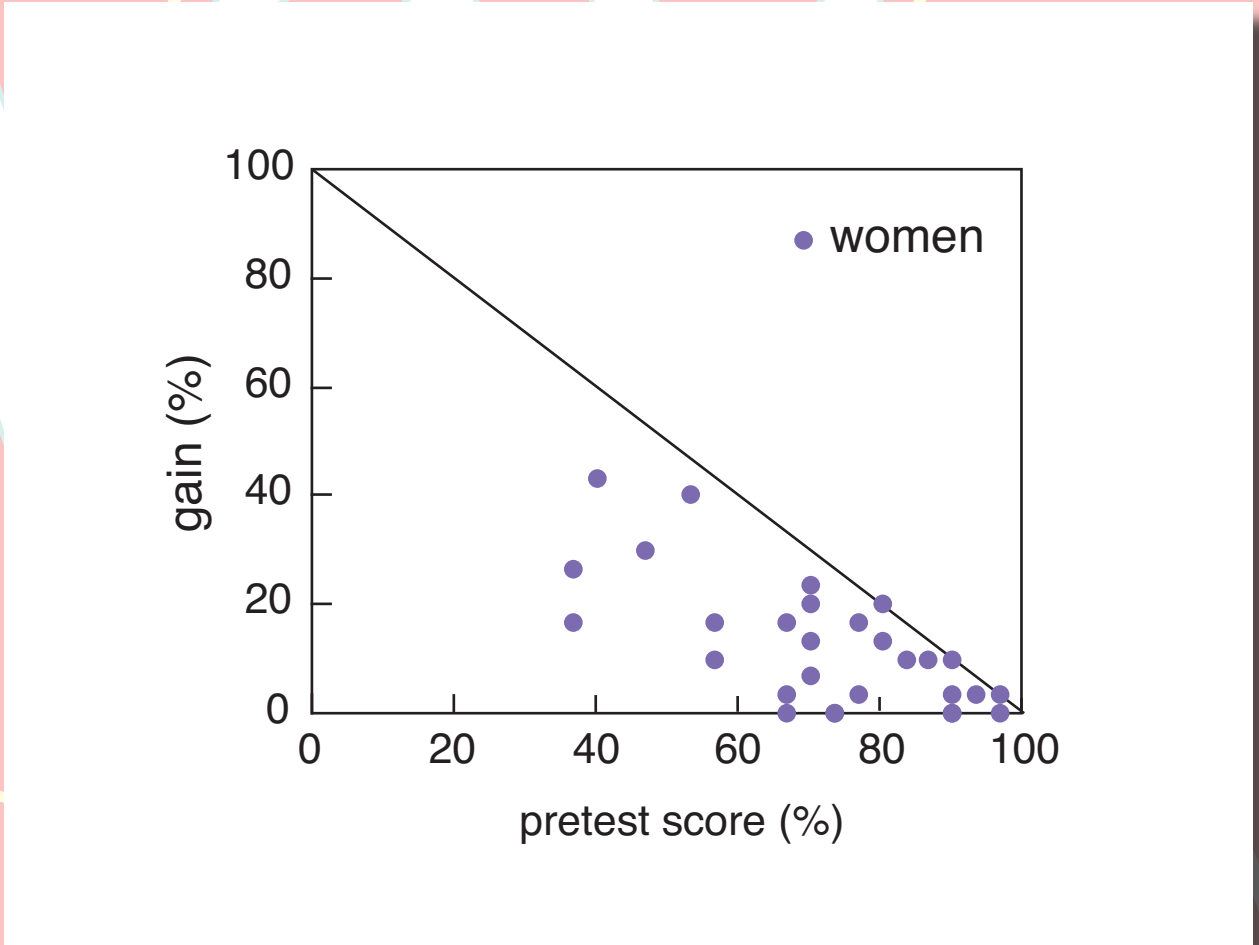


1 problem

2 PI

3 solution

**traditional class**

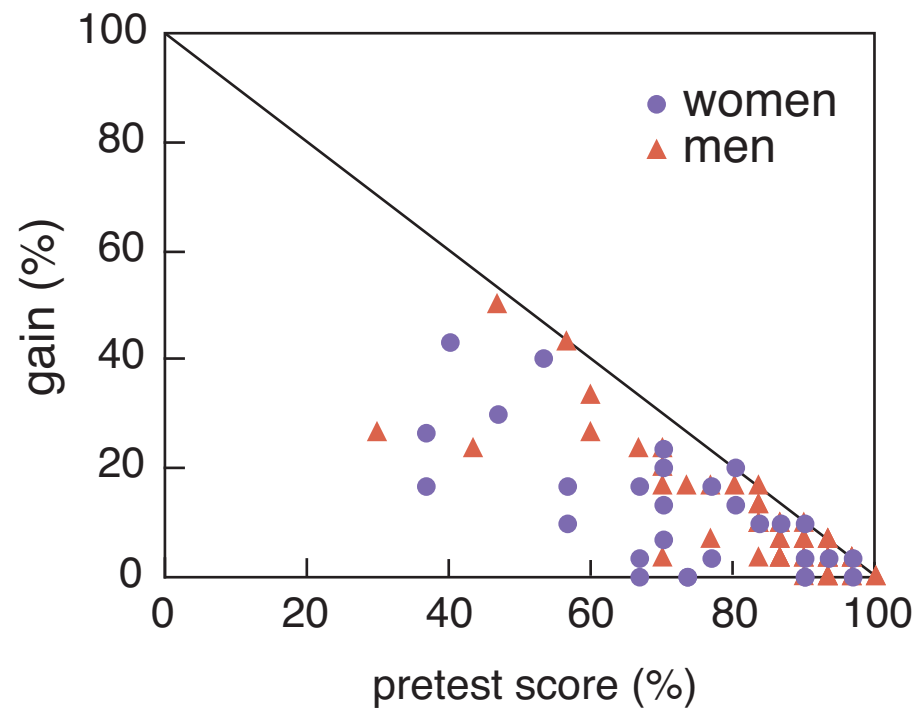


# 1 problem

**2 PI**

### 3 solution

traditional class

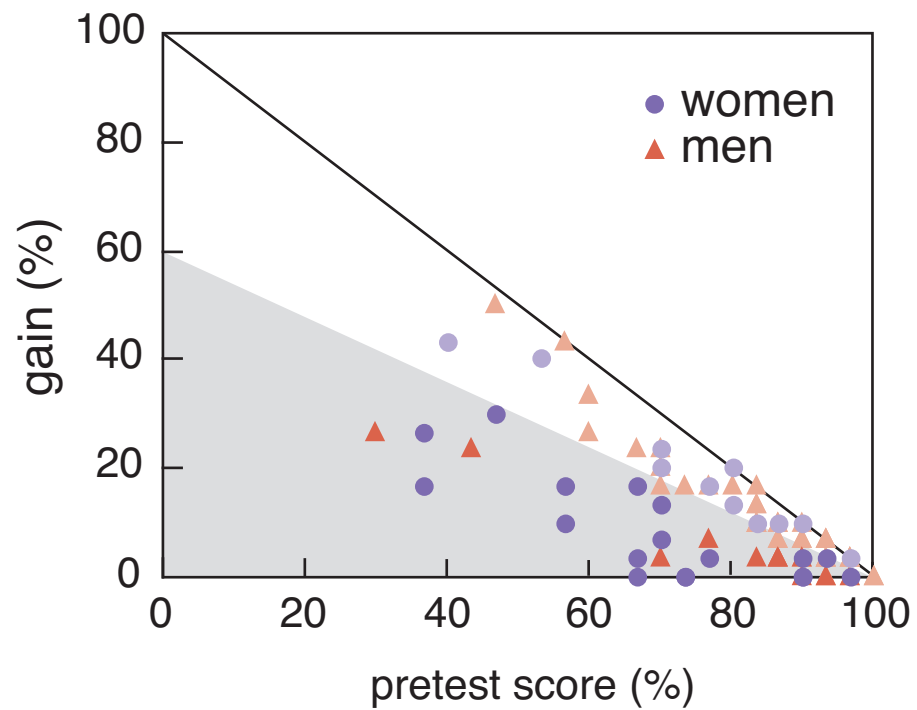


1 problem

2 PI

3 solution

## traditional class: gender imbalance

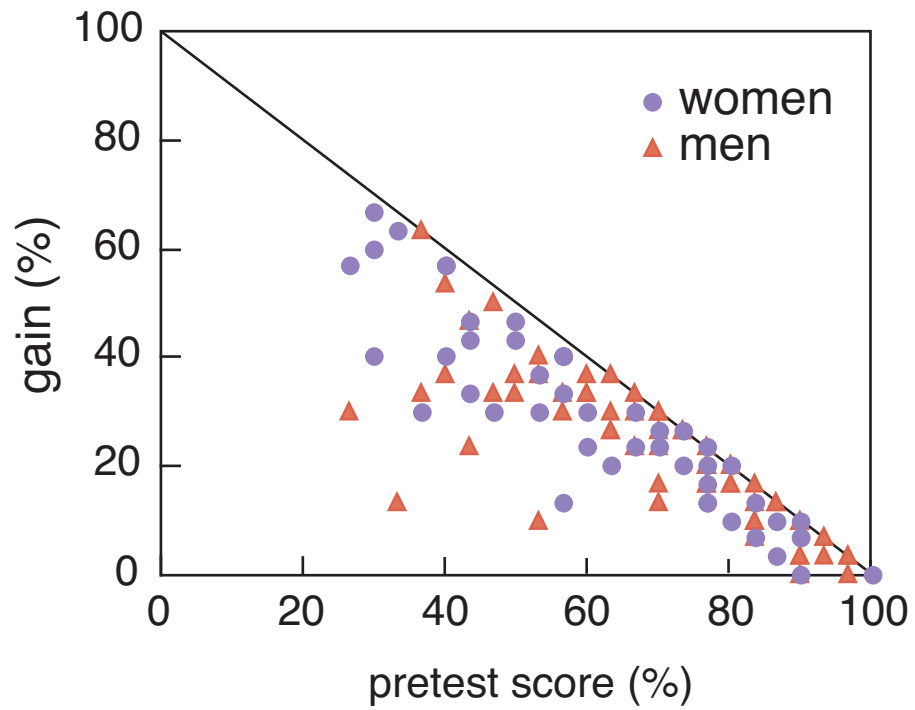


1 problem

2 PI

3 solution

# interactive class

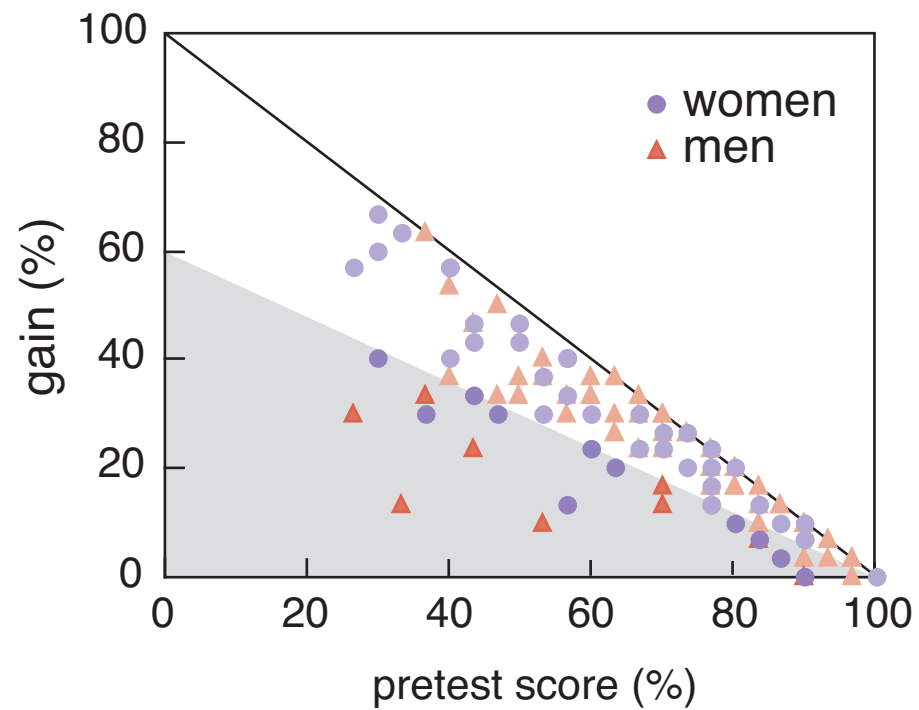


# 1 problem

## 2 PI

### 3 solution

## interactive class: gender balance



1 problem

2 PI

3 solution



The background of the slide is a faded, artistic illustration of a person's face, focusing on the eyes. The face is rendered in a style that resembles a book cover or a piece of aged paper. The eyes are large and detailed, with blue and brown tones. The overall color palette is muted, with shades of yellow, brown, and blue. The text is overlaid on this background.

## **Points to keep in mind:**

- **gap comes from culture and background**
- **interactivity makes a difference**

**Funding:**

**National Science Foundation**

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