The Biases that Bind Us:

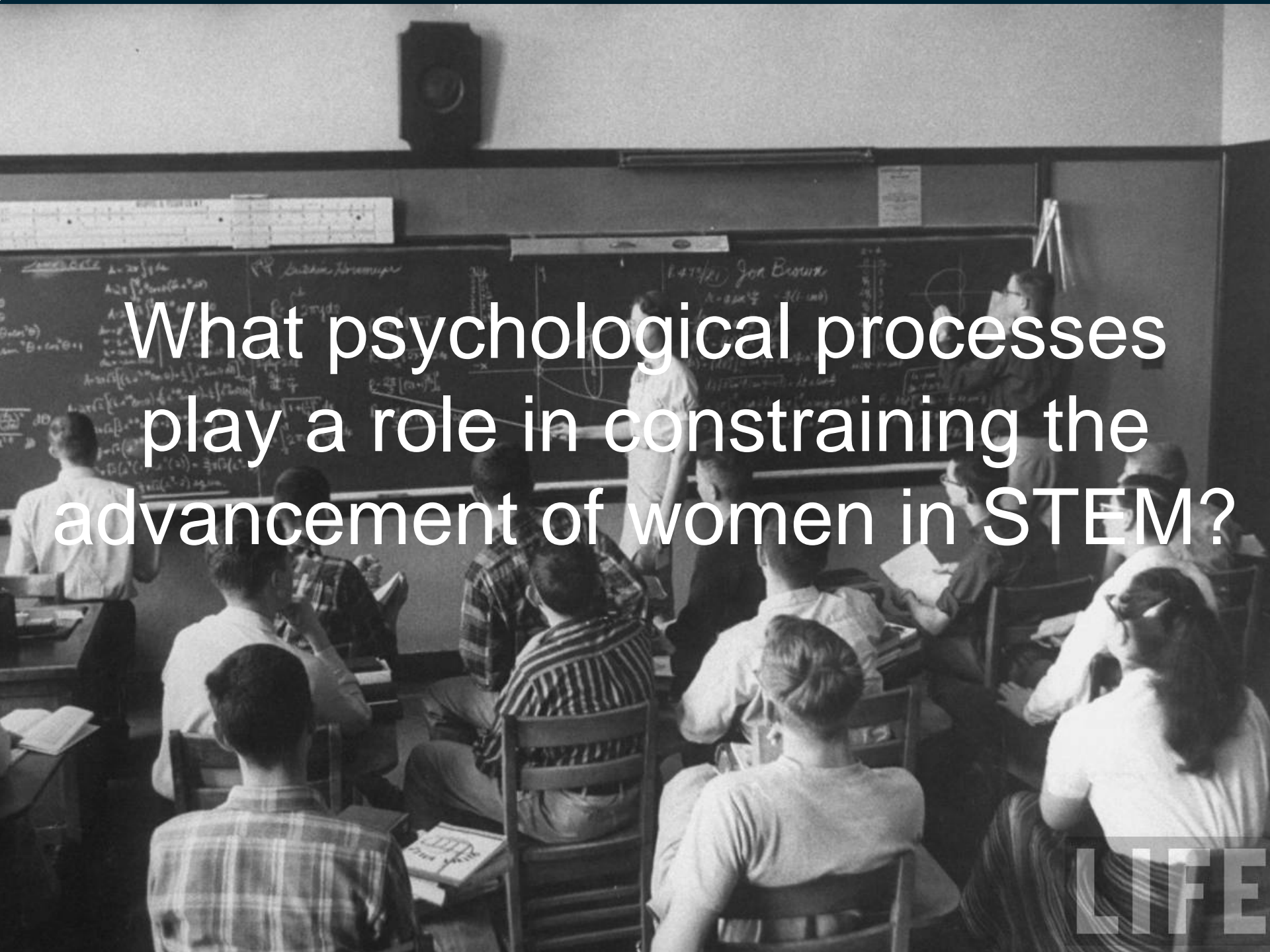## How Stereotypes Constrain Women's Experiences in STEM

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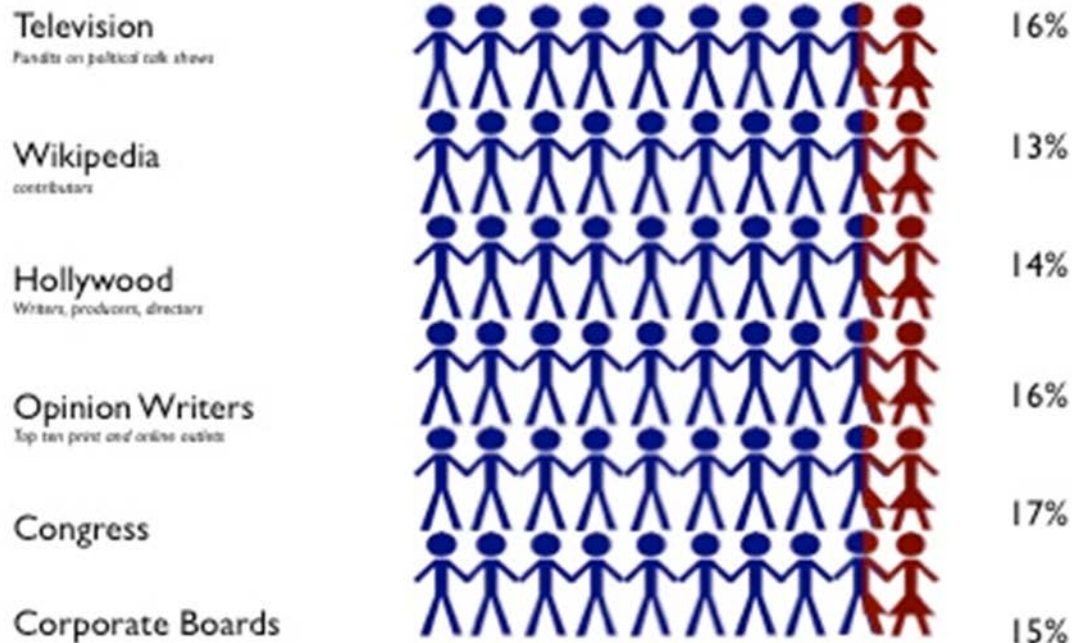
Department of Psychology

University of British Columbia

What psychological processes play a role in constraining the advancement of women in STEM?
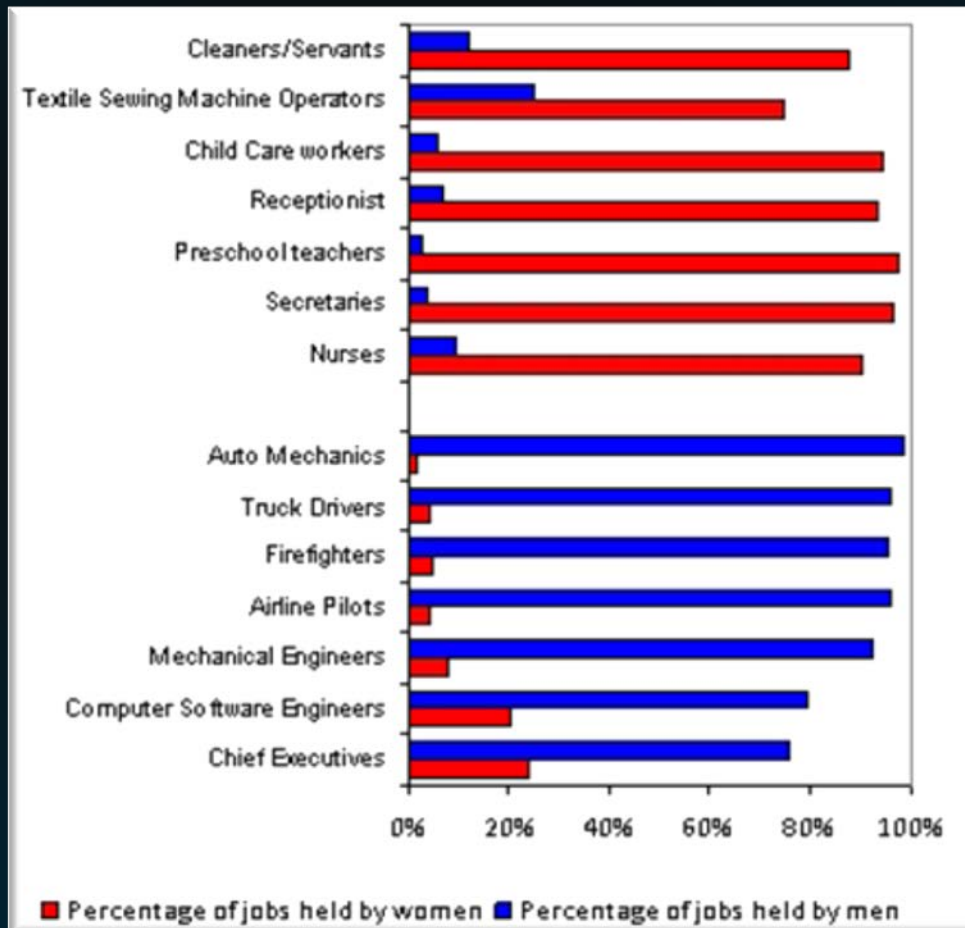
Hearing (mostly male) Voices?

People are what we see people do

Unequal distribution of men and women in roles creates stereotypes
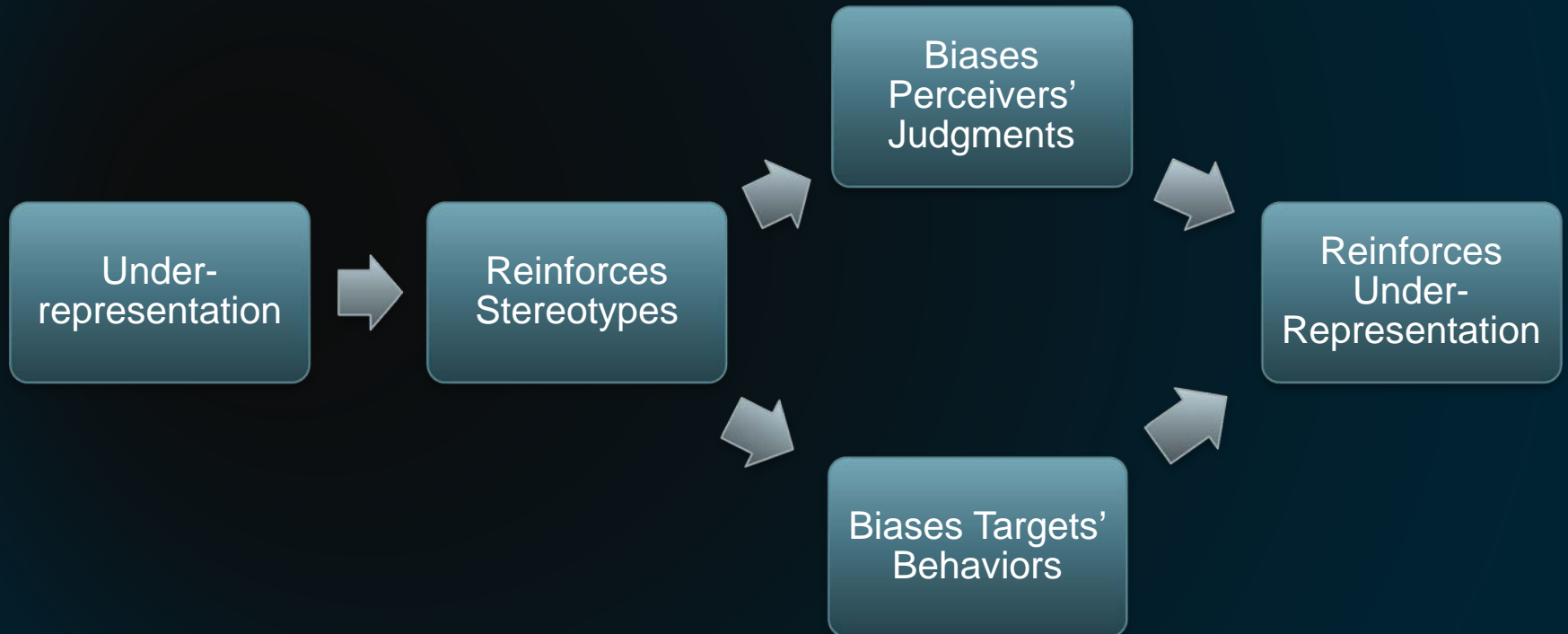- Eagly (1987)

Caring

Nurturing

People Oriented

Mathematical

Task Oriented

Leaders

Culture Recreates Itself

Under-representation → Reinforces Stereotypes → Biases Perceivers' Judgments → Reinforces Under-Representation

Reinforces Stereotypes → Biases Targets' Behaviors → Reinforces Under-Representation
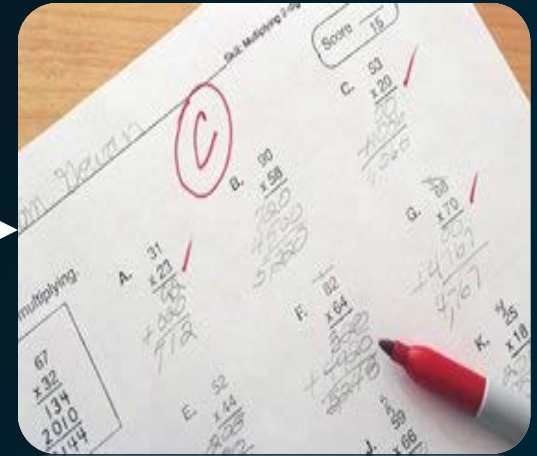
Stereotype Threat

- Contexts can cue concerns that one might confirm a negative stereotype (Steele & Aronson, 1995)
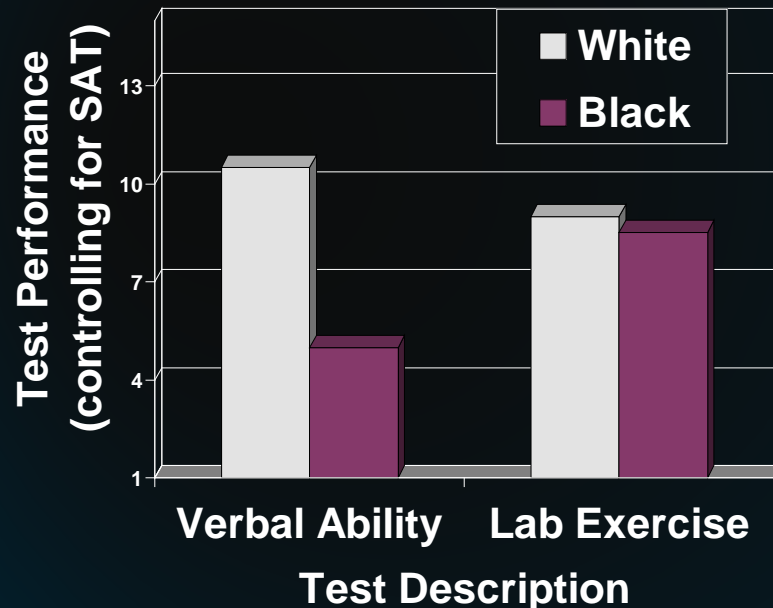
Stereotype Threat
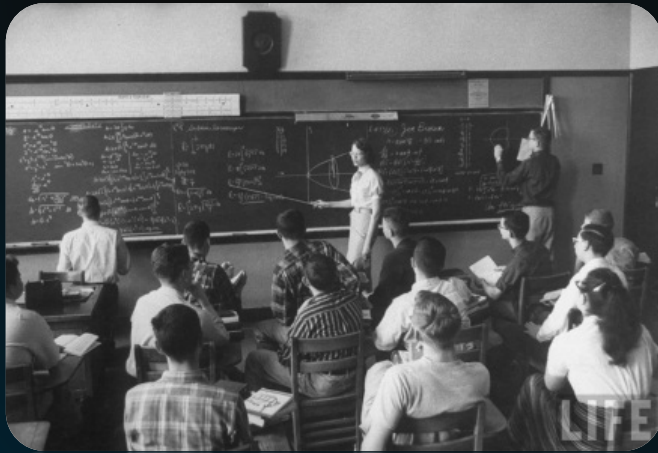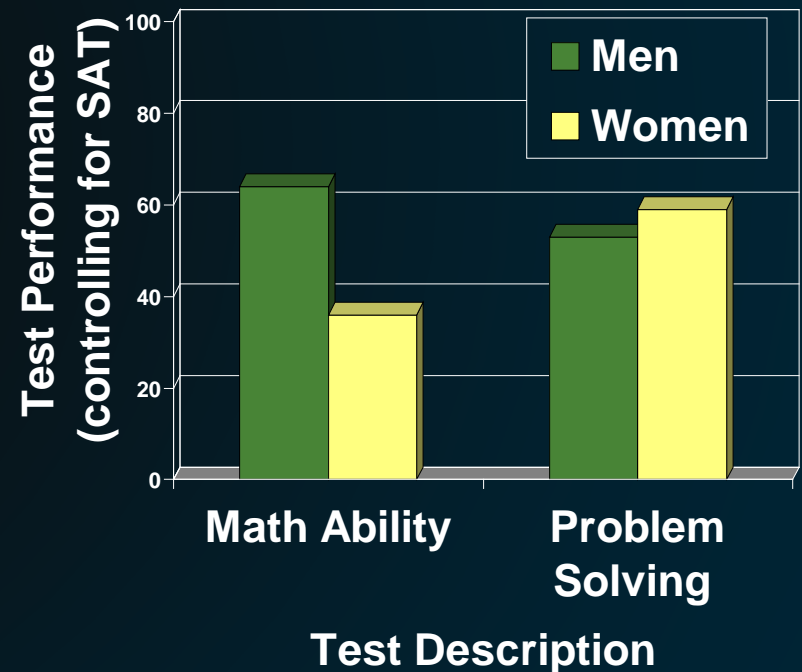
Poor Performance

Test performance can be affected by how the task is described
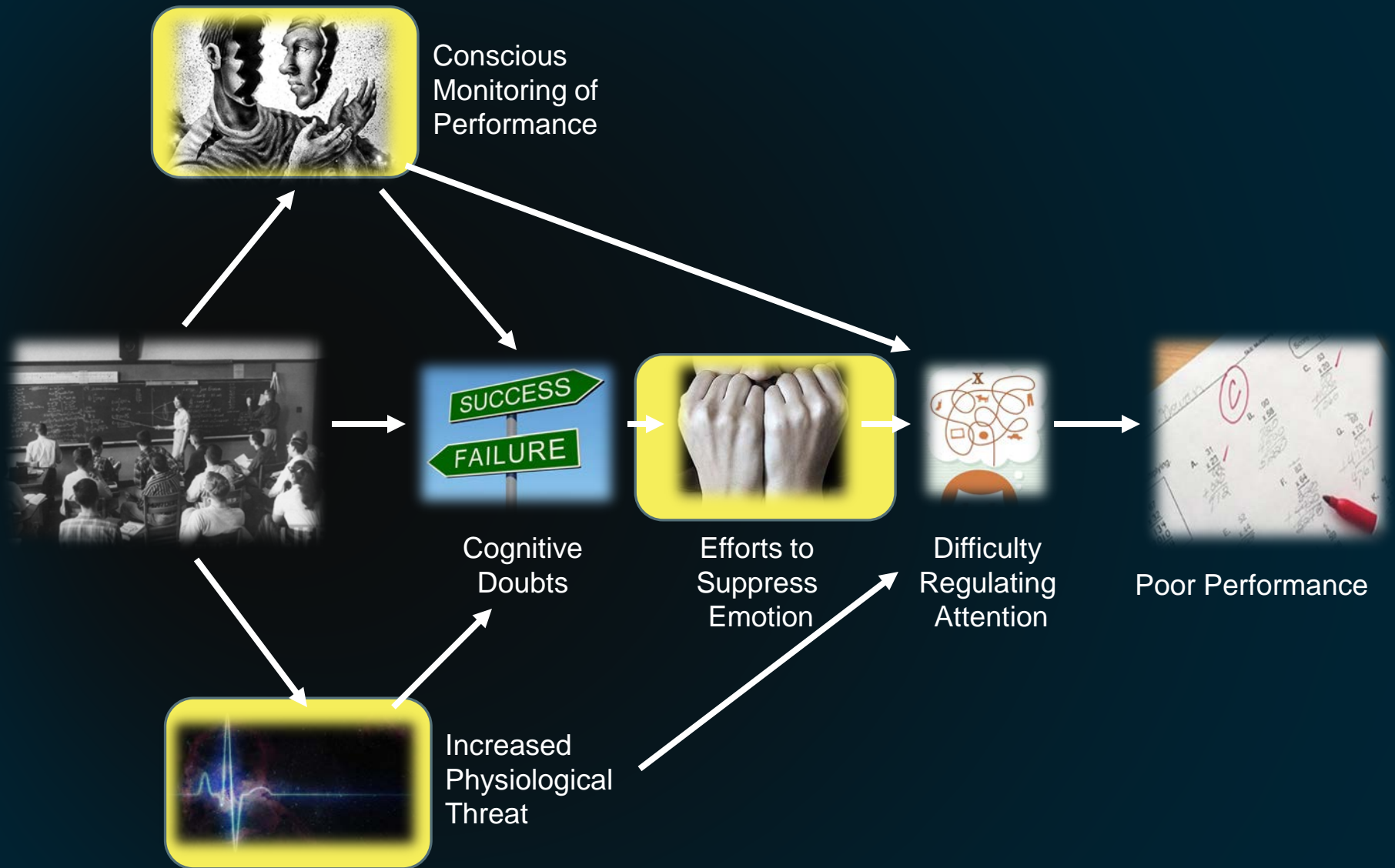
Racial Differences in Verbal Performance

Gender Differences in Math Performance

Steele & Aronson (1995)   Johns, Schmader, & Martens (2005)
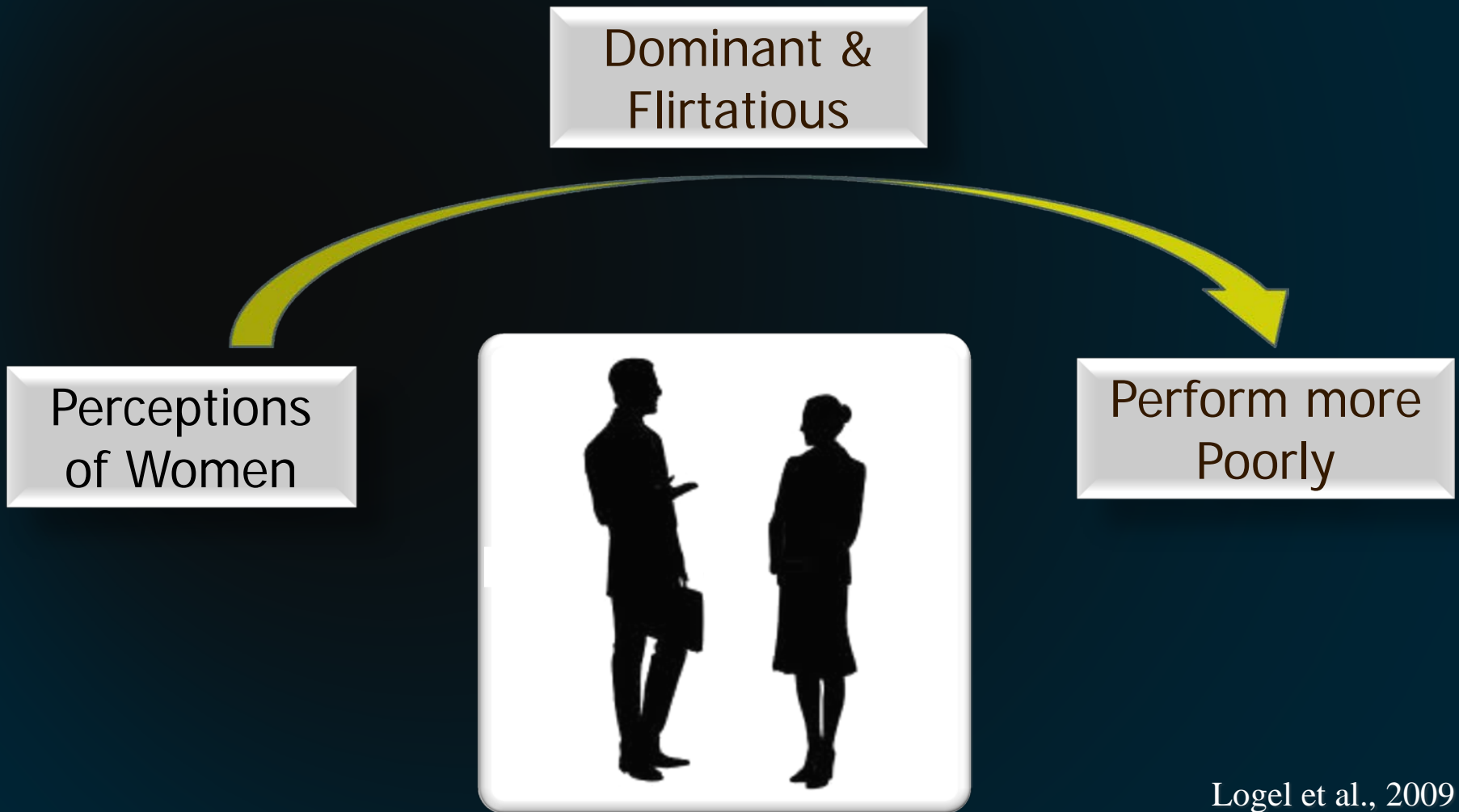
Evidence of Stereotype Threat

- Dozens of laboratory demonstrations
  - Stereotypes based on gender, race, age, SES

- Mixed evidence that effect is shown in elementary & secondary school
  - Ambady, Shih, Kim, & Pittinsky (2001); Ganley et al., (2013)

- Replications in naturalistic classroom environments
  - Keller & Dauenheimer (2003); Walton & Spencer (2009); Danaher & Crandall (2008)

Conscious Monitoring of Performance

Cognitive Doubts

Efforts to Suppress Emotion

Difficulty Regulating Attention

Poor Performance

Increased Physiological Threat

SUCCESS
FAILURE

Schmader, Johns, & Forbes, 2008

Being Stereotyped Constrains Conversations

Stereotypes Create Self-Fulfilling Prophecies

Dominant & Flirtatious

Perceptions of Women

Perform more Poorly

Logel et al., 2009

Listening at the Door of Science

$\beta = -.41^{\#}$

$\beta = .74***$
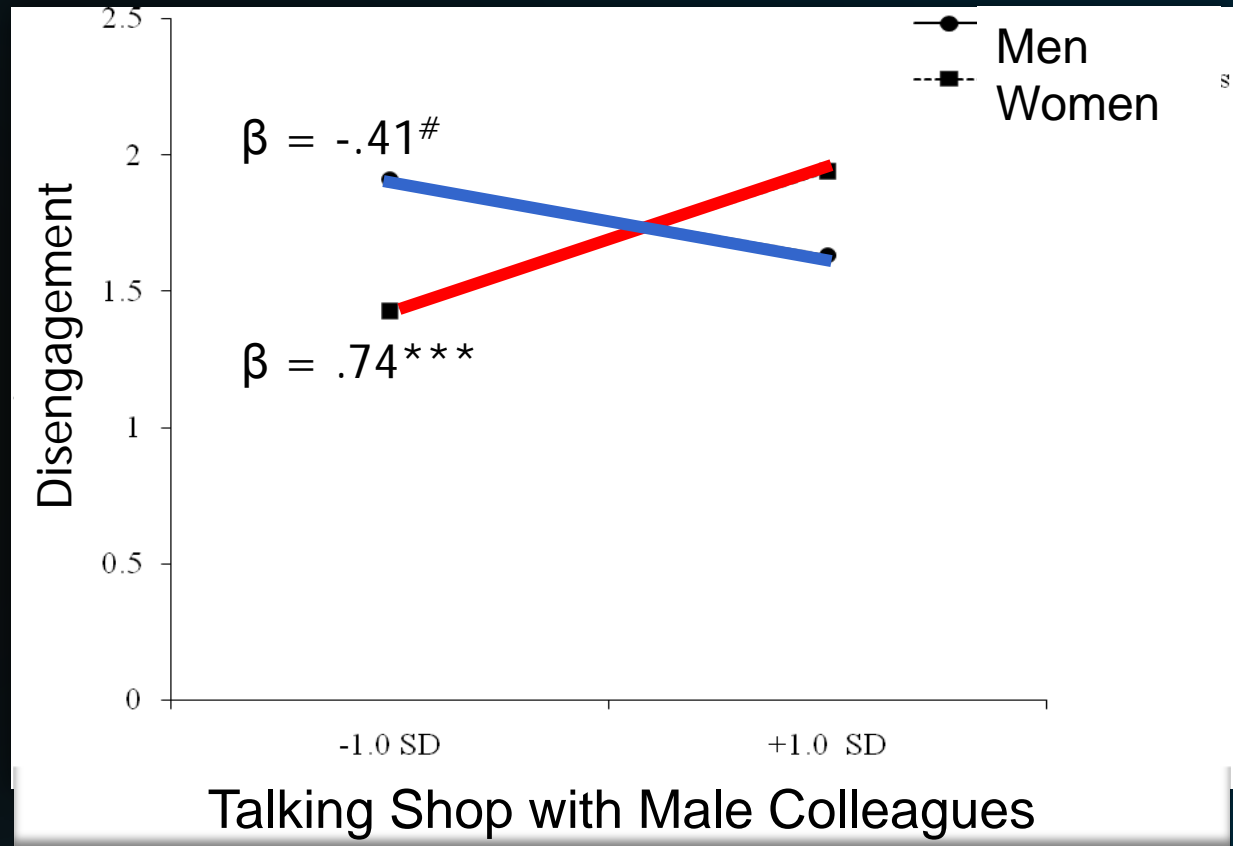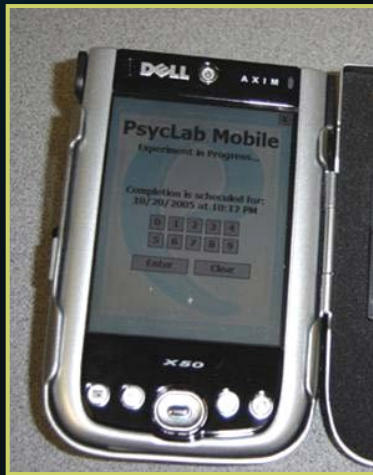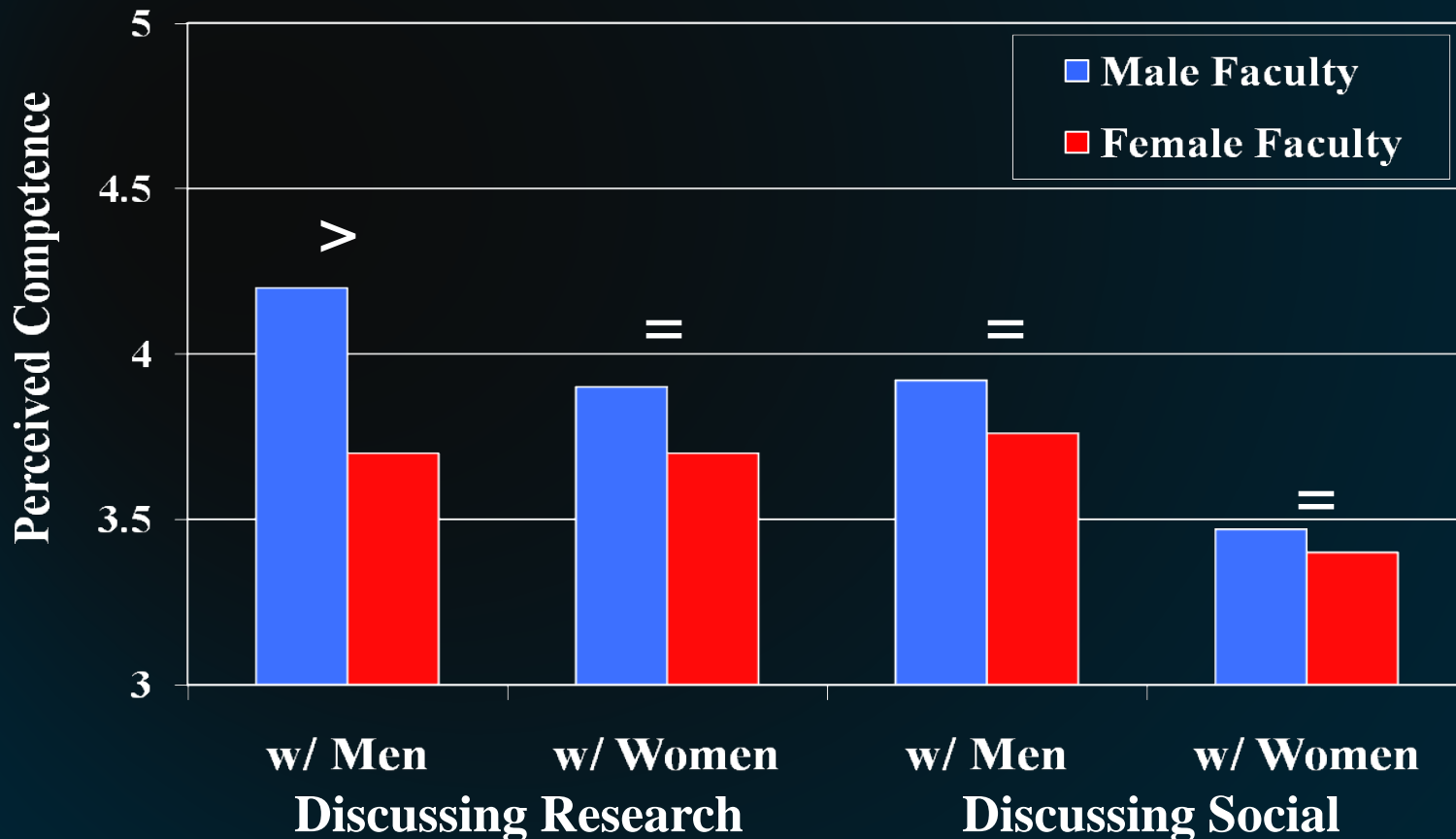
Interaction: $\beta = .58$, $t(34) = 3.94$, $p < .001$
Research conversation with female colleagues showed no effects
Holleran, Whitehead, Schmader, & Mehl (2011)

When discussing research with male colleague…

- Were men dominating the conversation?   *- no*
- Do women come across as less likable?   *- no*
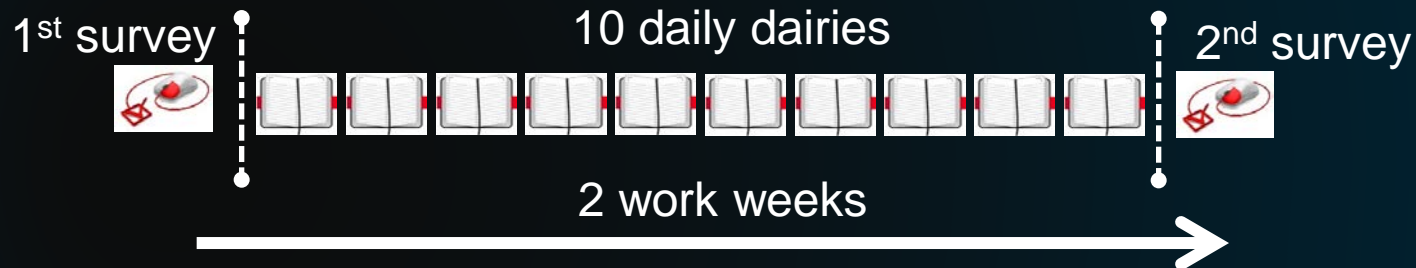- Do women come across as less competent? *- yes*

Stereotype Threat in Engineering
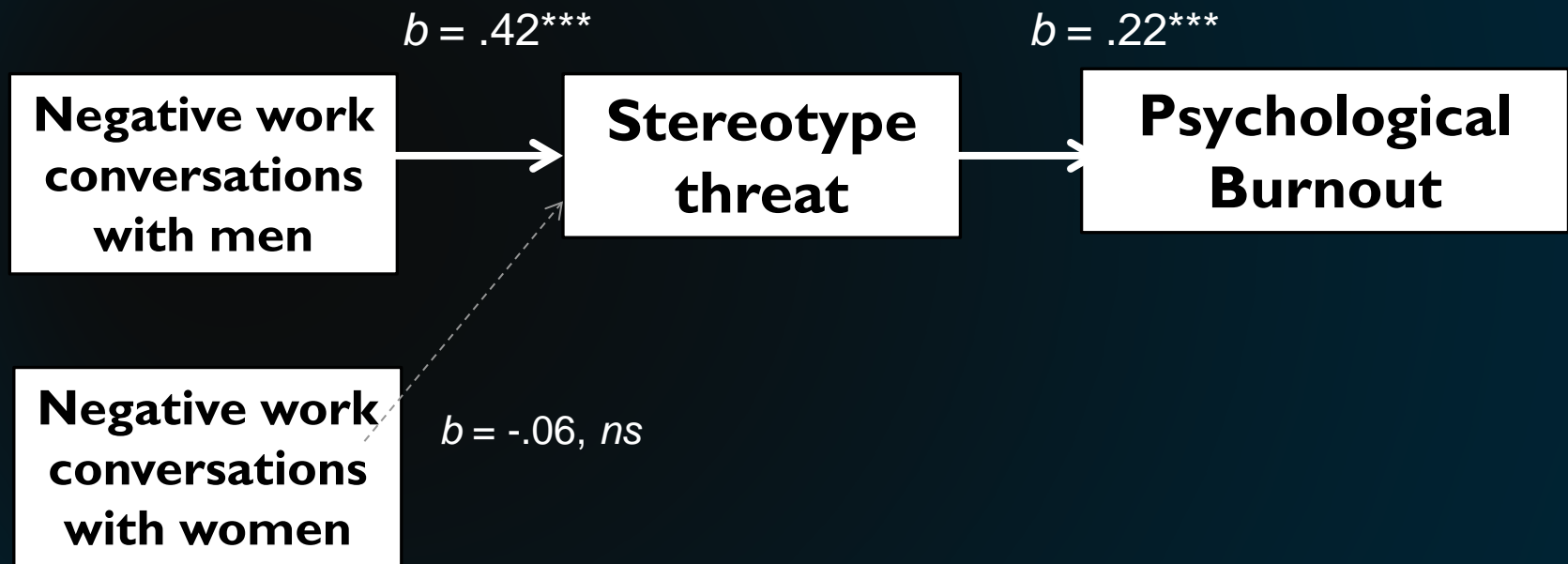
Engendering Engineering Success
Hall, Schmader, & Croft (2013)

- 52 female, 44 male professional engineers
  - Recruited from 51 engineering companies across Canada

1st survey | 10 daily dairies | 2nd survey

2 work weeks

- Daily diary measures
  - Positivity of conversations
  - Daily Stereotype threat
  - Psychological Burnout

Individual measures
- Organizational Inclusion
- Global Stereotype threat
- Organizational commitment

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For Women only,
Negative conversations with Men
Predict Negative Outcomes

$b = .42^{***}$

$b = .22^{***}$

| **Negative work conversations with men** | → | **Stereotype threat** | → | **Psychological Burnout** |

| **Negative work conversations with women** |

$b = -.06$, *ns*

The Perception of Gender Inclusive Policies are a Buffer to Stereotype Threat

Negative conversations with women

Female representation

Negative conversations with men

Gender inclusive policies

Stereotype threat

Organizational commitment

ß = -.46*

ß = .31*
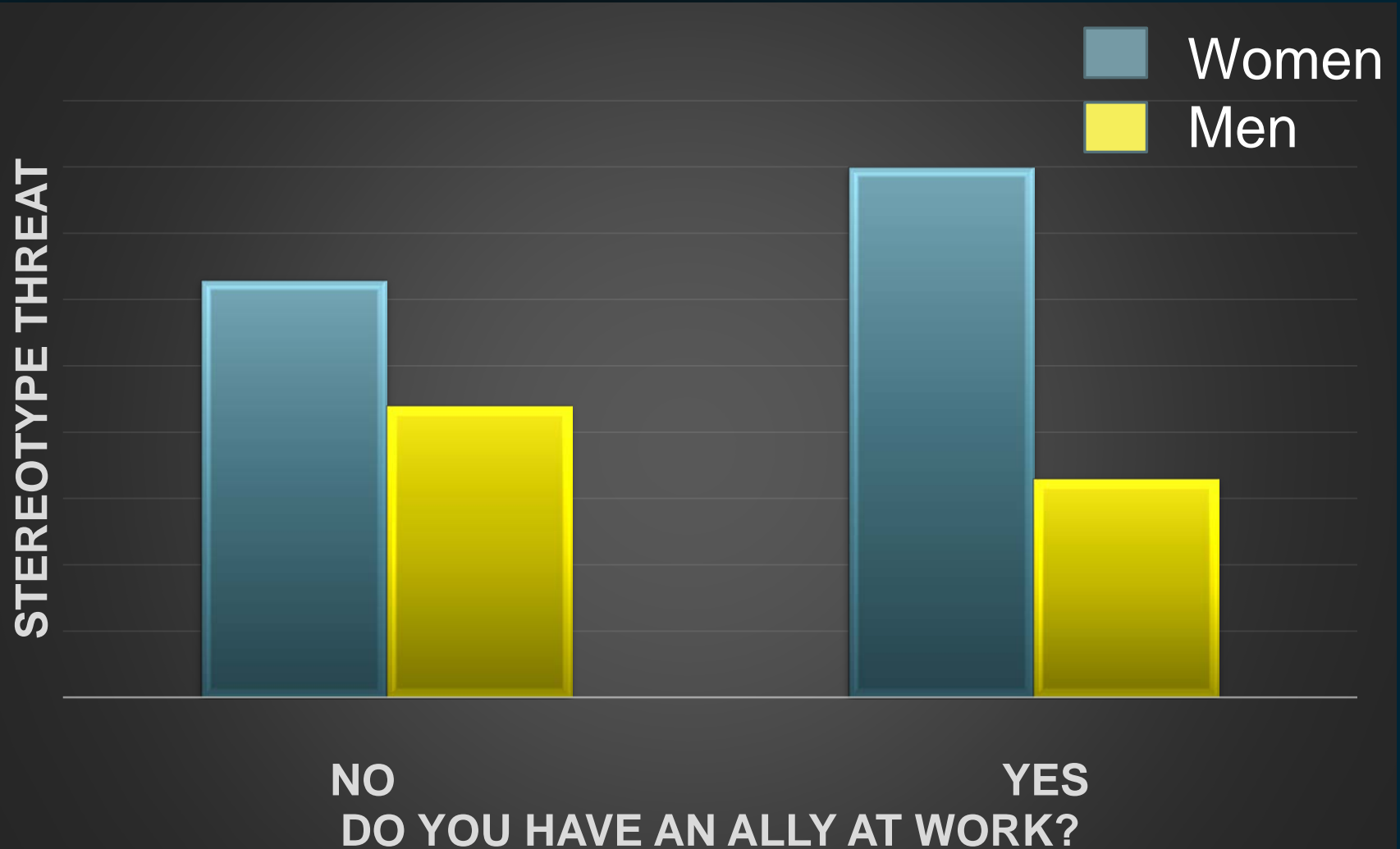
ß = -.30*

ß =ß = .232309, ns)
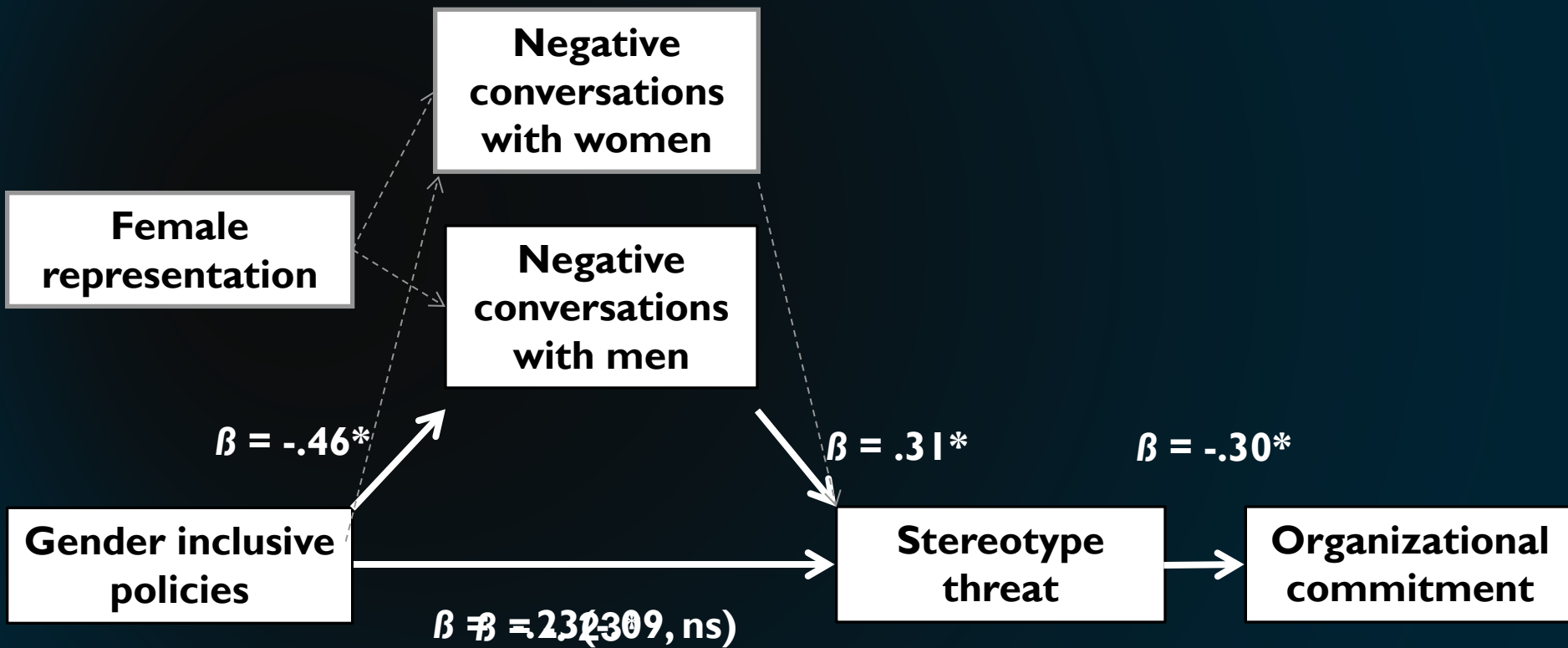
*Controlling stigma consciousness
Signif indirect effect αß = -.14*

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Translating Evidence into Action

- **Laying the Groundwork for Change**
  - Role Models change stereotypes
  - Climate control: creating threat free environments
  - Fostering community and belonging

- **Awareness and Education**
  - AMT Approach: Awareness, Motivation, and Time
  - Training in recognizing and minimizing cues to threat
  - Accountability: Appoint an equity advocate

Having an Ally Alleviates Stereotype Threat

Thank you!