The Biases that Bind Us:
How Stereotypes Constrain Women’s Experiences in STEM

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

Women

- Television: Pundits on political talk shows, 16%
- Wikipedia: Contributions, 13%
- Hollywood: Writers, producers, directors, 14%
- Opinion Writers: Top ten print and online outlets, 16%
- Congress, 17%
- Corporate Boards, 15%

Women’s overall share of voice: 15%
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

Under-representation

Reinforces Stereotypes

Biases Perceivers’ Judgments

Reinforces Under-Representation

Biases Targets’ Behaviors

Culture Recreates Itself
Stereotype Threat

- Contexts can cue concerns that one might confirm a negative stereotype (Steele & Aronson, 1995)
Test performance can be affected by how the task is described.

### Racial Differences in Verbal Performance

- **Verbal Ability**: White: 13, Black: 10
- **Lab Exercise**: White: 10, Black: 7

S. Steele & E. Aronson (1995)

### Gender Differences in Math Performance

- **Math Ability**: Men: 80, Women: 60
- **Problem Solving**: Men: 60, Women: 40

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)
Increased Physiological Threat
Cognitive Doubts
Efforts to Suppress Emotion
Difficulty Regulating Attention
Poor Performance

Conscious Monitoring of Performance

Schmader, Johns, & Forbes, 2008
Being Stereotyped Constrains Conversations
Stereotypes Create Self-Fulfilling Prophecies

Perceptions of Women

Dominant & Flirtatious

Perform more Poorly

Logel et al., 2009
Listening at the Door of Science

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

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

Individual measures
- Organizational Inclusion
- Global Stereotype threat
- Organizational commitment
For Women only, Negative conversations with Men Predict Negative Outcomes

- Negative work conversations with men → Stereotype threat: $b = .42^{***}$
- Stereotype threat → Psychological Burnout: $b = .22^{***}$
- Negative work conversations with women → Stereotype threat: $b = -.06, ns$
The Perception of Gender Inclusive Policies are a Buffer to Stereotype Threat

- Negative conversations with women
- Negative conversations with men
- Female representation
- Gender inclusive policies
- Stereotype threat
- Organizational commitment

$\beta = -.46^*$

$\beta = .31^*$

$\beta = -.30^*$

$\beta = .23(\text{ns})$

*Controlling stigma consciousness
Signif indirect effect $\alpha \beta = -.14^*$
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

Do you have an ally at work?

<table>
<thead>
<tr>
<th>Stereotype Threat</th>
<th>Women</th>
<th>Men</th>
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<tbody>
<tr>
<td>No</td>
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Thank you!

Collaborators:
- Andy Baron
- Kate Block
- Jason Chin
- Alyssa Croft
- Elizabeth Croft
- Chad Forbes
- Will Hall
- Mike Johns
- Mike Mrazek
- Jonathan Schooler
- Johnny Smallwood

With Funding From:
- SSHRC
- NSERC
- The Hampton Fund
- NIMH