

Questions of Belonging: Their Implications for Performance, Merit, and Intervention

Greg Walton
Stanford University

Some worries people have in school and at work

Do I belong?
When I feel lonely (or disrespected, etc.), does it mean I don't belong?

Does it matter?
When it's boring or frustrating, does it mean there's no reason to try?

Can I do it?
When it's hard or I fail, does it mean I can't do it?

Socio-Cultural Contexts Give Rise To Specific Questions

Including perspectives and risks or contingencies rooted in
personal and social identity

School Desegregation, and Resegregation



Contexts Raise Questions;

*Can people like me belong and
succeed here?*

People look to **cues in contexts** to answer
these questions

Part 1

Understanding Cues

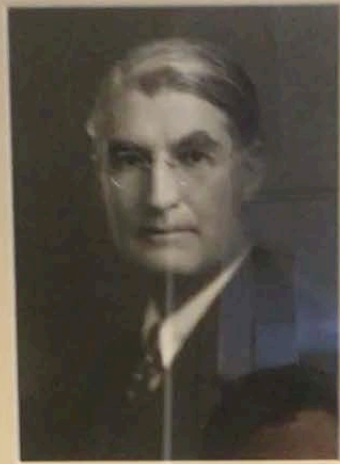
“I Count”



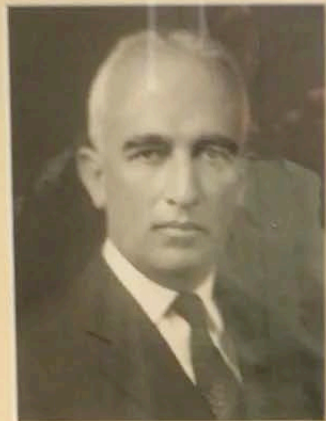
“Like many other Blacks, when I find myself in a new public situation, I will count.”

-Arthur Ashe

The “Wall of Fame” in the main conference room at a Major Professional Organization in San Francisco



Joseph J. Webb
President 1927 - 1928



Elias S. Rudenau
President 1928 - 1929



Charles R. Beardsley
President 1929 - 1930



Leonard
President



Peter J.
President



Guy Richards
President



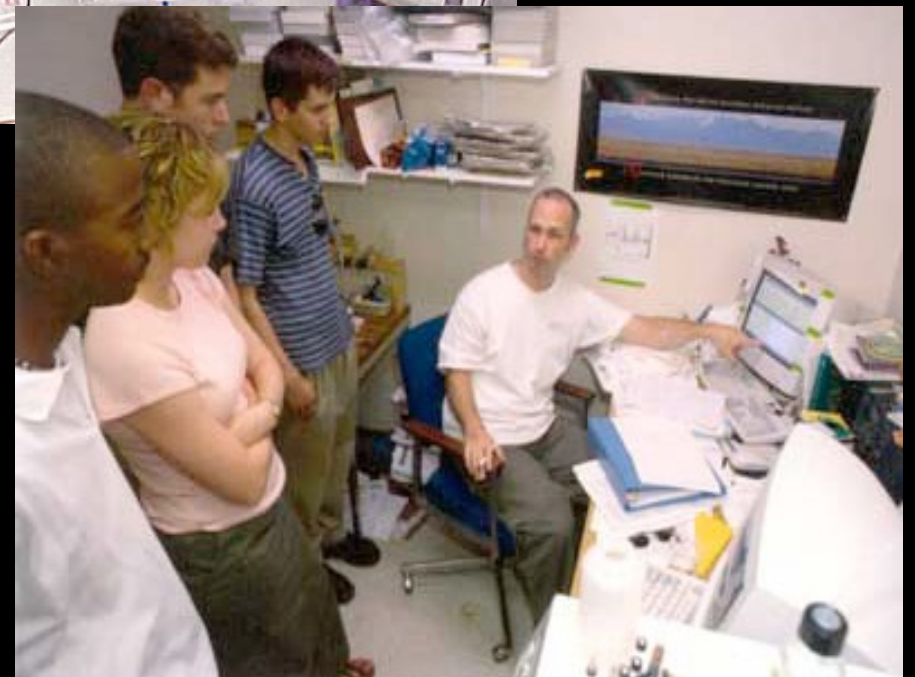
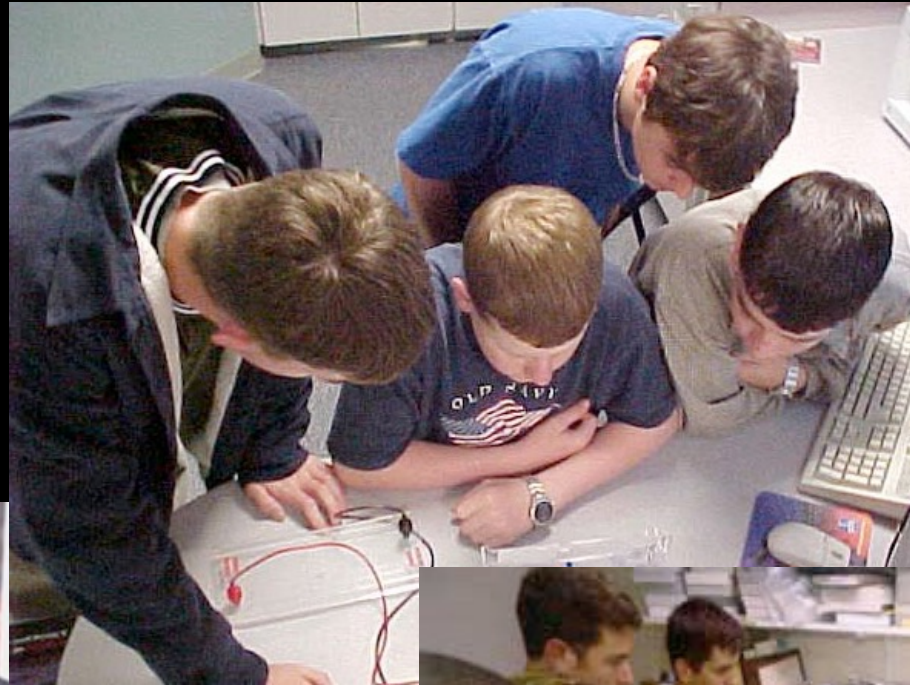
A Physics Conference

Summer Conference Video

Balanced Video (1:1)



Unbalanced Video (3:1)



Mary Murphy
Indiana

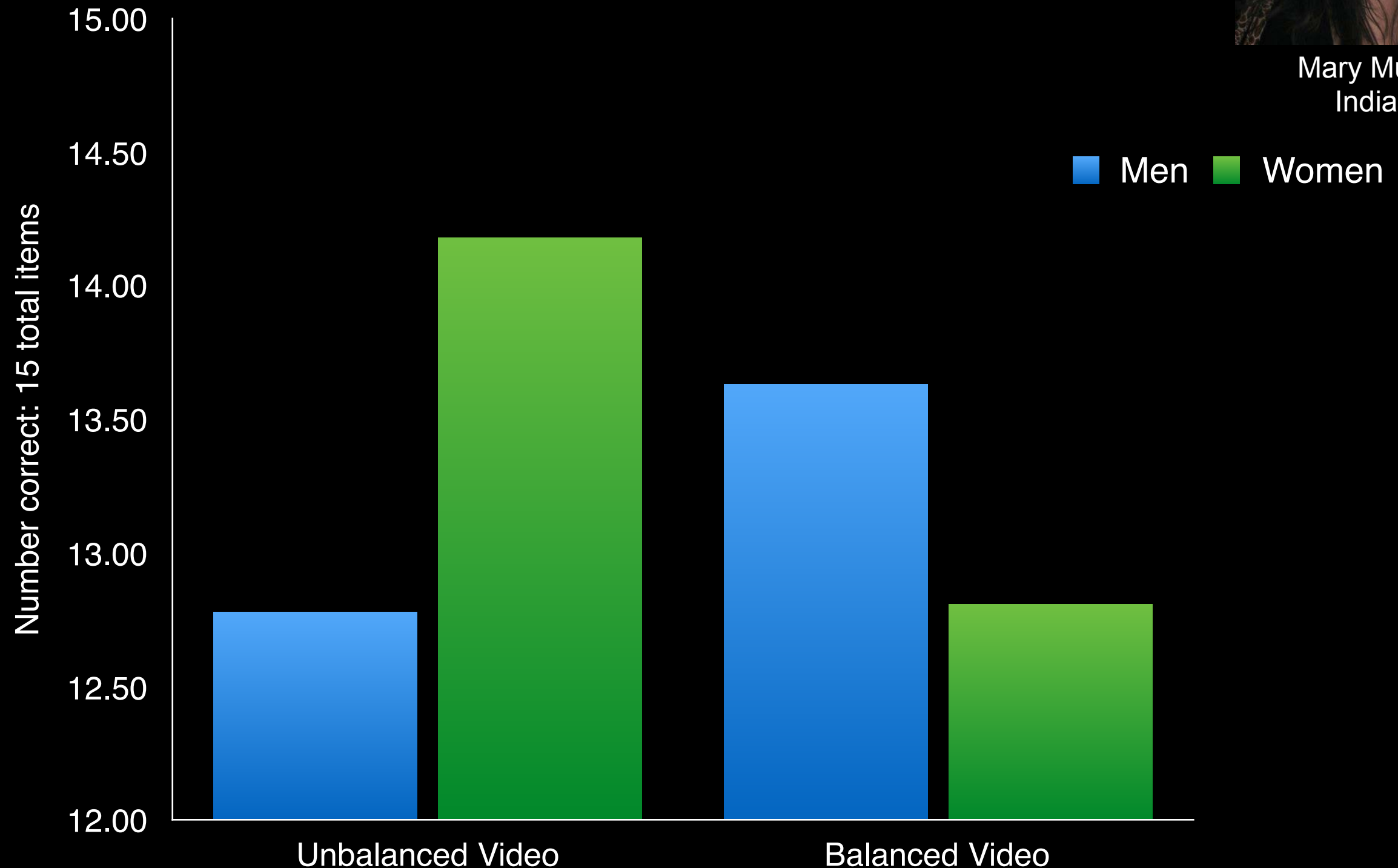
- 2 (participants gender) X 2 (video) factorial

Unbalanced Video = cue of identity threat for women

Vigilance: Recognition Memory for Conference Video



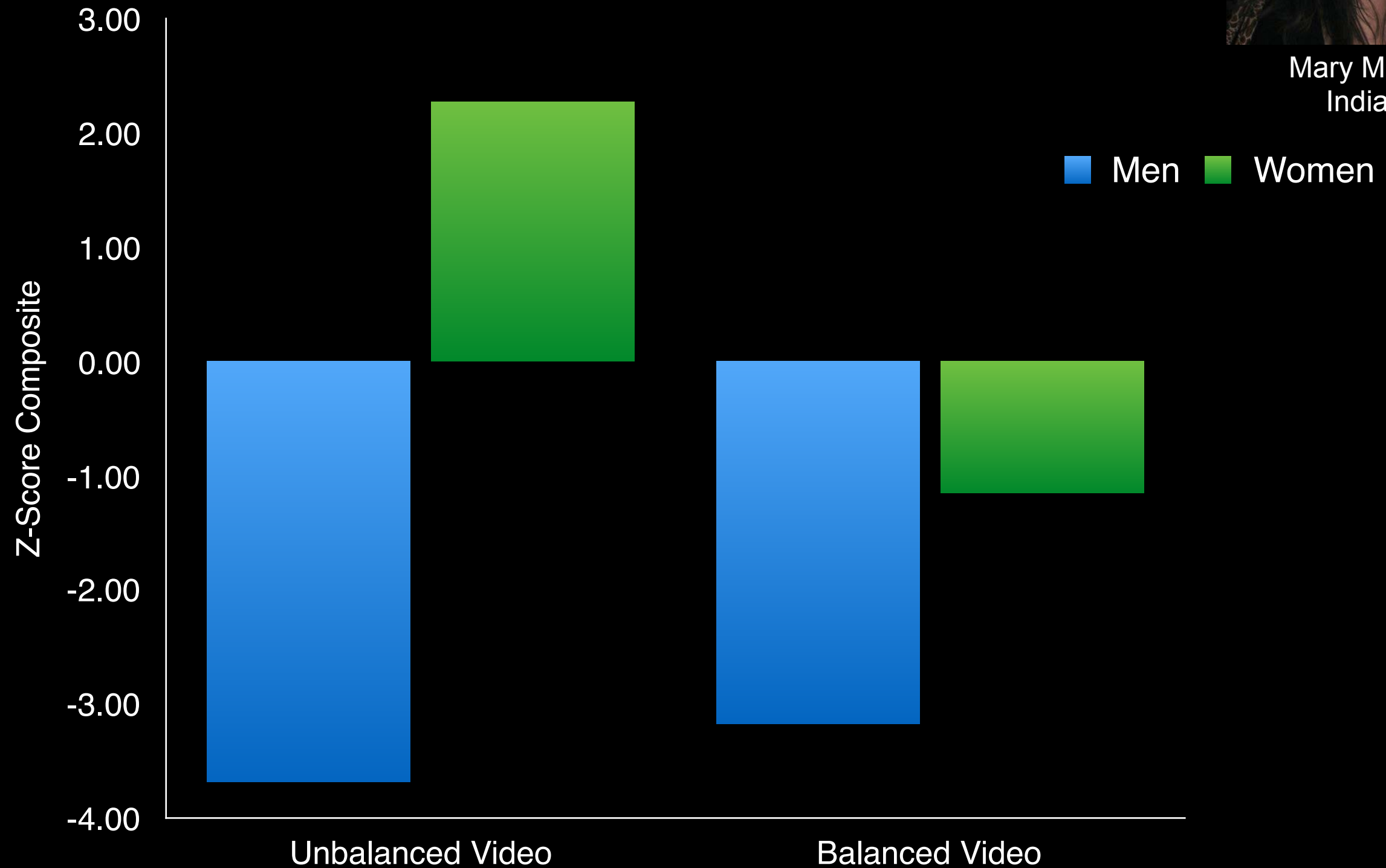
Mary Murphy
Indiana



Cardiovascular Reactivity



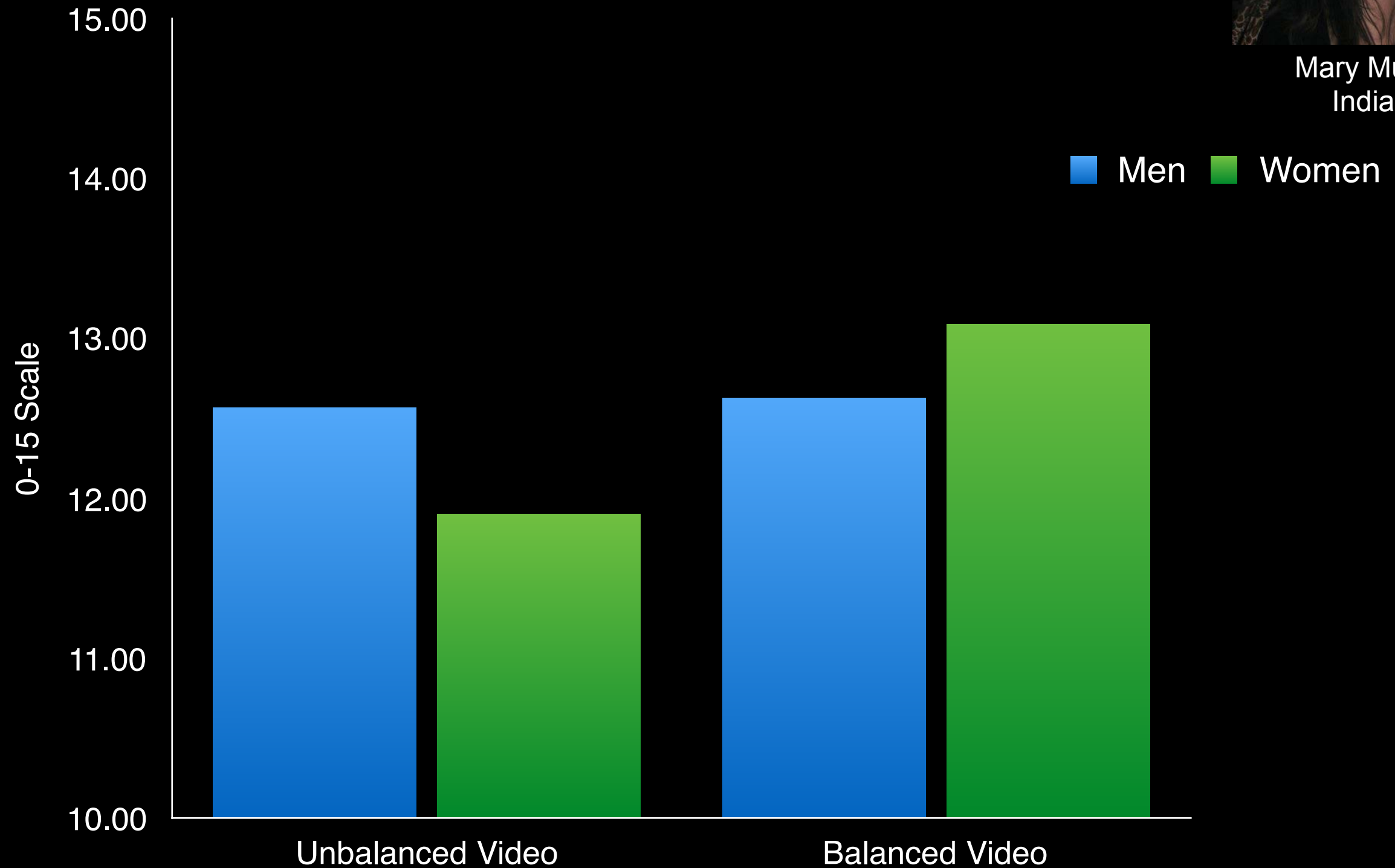
Mary Murphy
Indiana



Sense of Belonging



Mary Murphy
Indiana



“I Count”

What's on the Wall

What's on the Wall?



Sapna Cheryan
U-Washington

Stereotypical Room

Star Trek
poster



Sci Fi books

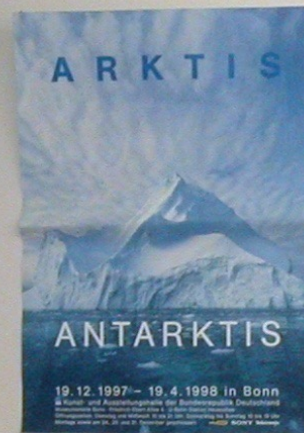


Coke
cans

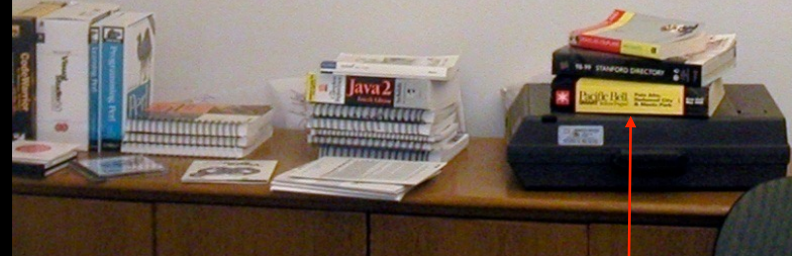


Non-Stereotypical Room

Nature
poster



Neutral books



Water
bottles

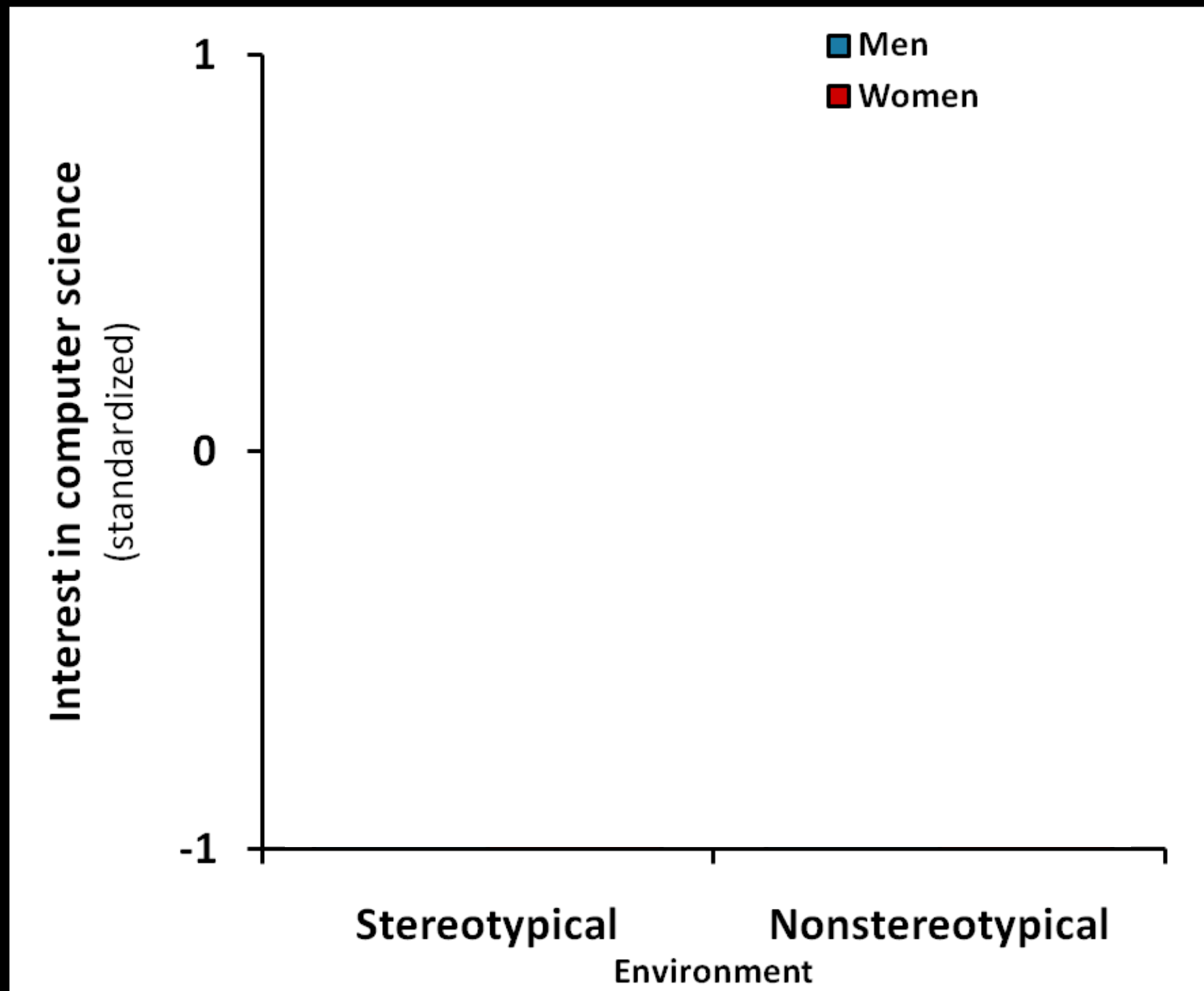


Interest in Computer Science

(Cheryan et al., 2009)



Sapna Cheryan
U-Washington



“I Count”

What’s on the Wall

Interactions and Beliefs

Are you flirting with me?

(Logel, Walton, Spencer, Iserman, Von Hippel, & Bell, 2009)



Christine Logel
University of Waterloo

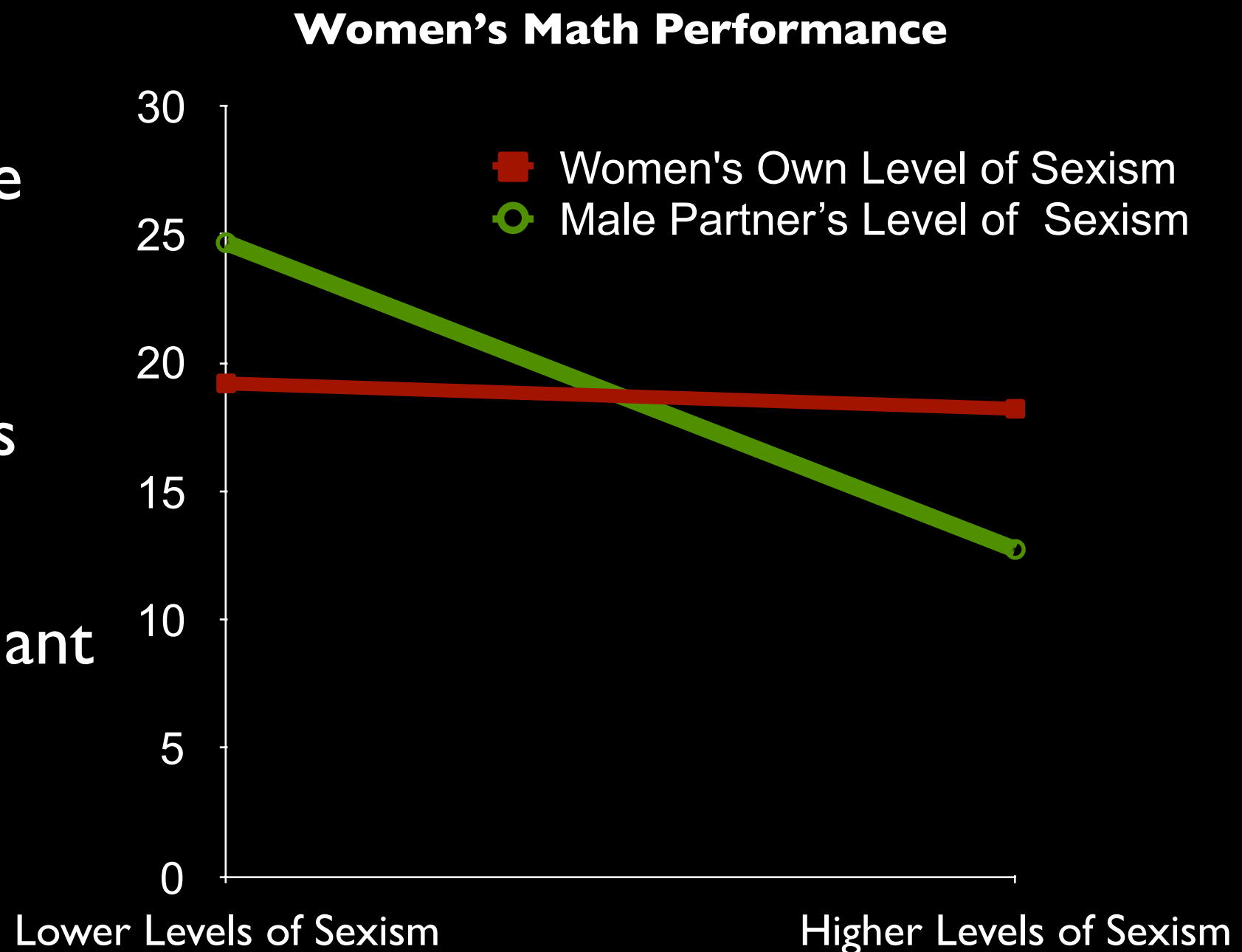
- Male and female engineering students discussed an engineering news story
- Previously completed a subtle measure of sexism
- Took a math test

Men's Sexism and Women's Math Performance



Christine Logel
University of Waterloo

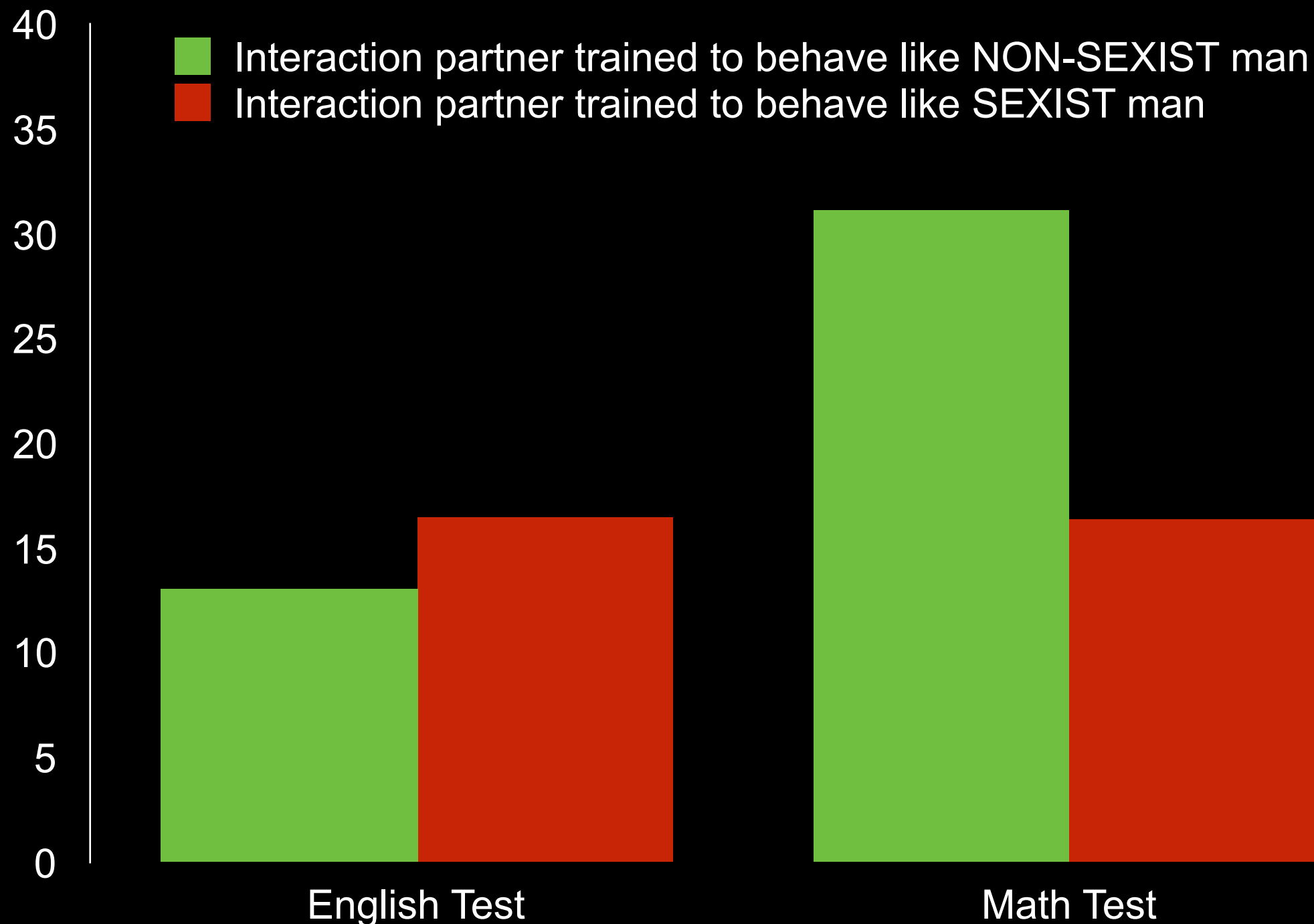
- More sexist men
 - More open posture
 - Sat closer
 - Looked at woman's body more
 - Rated more dominant and confident



Men's Sexist Behavior Causes Women's Performance to Drop



Christine Logel
University of Waterloo



Conversations Among Professional Engineers

(Hall, Schmader, & Croft, 2015)



Will Hall
Brock University

- Male and female professional engineers completed daily surveys

Social Identity Threat

Today at work...

- *I felt very aware of my gender.*
- *I was concerned that, because of my gender, my actions influenced the way other people interacted with me.*

Results

- *Women experienced more identity threat than men*
- *Especially on days when they had negative conversations with men*
- *Predicted greater levels of daily burnout*

Can I Contribute Here?

(Muragishi & Walton, in prep)

- 897 employees of a large Silicon Valley tech company
- Report on belonging at company
- And in response to three work scenarios:

Neutral Scenario

Imagine that you joined a new team. It's a small team. The team uses some programs you know, and another that is pretty idiosyncratic. There is a team manager and several other members of the team.



Gregg Muragishi
Stanford University

Can I Contribute Here?

(Muragishi & Walton, in prep)



Gregg Muragishi
Stanford University

Negative Scenario

*... You're working on a particular technical problem that needs to be solved with your manager, Evan. You feel good about an approach to the problem you've been looking into. You know it's promising. You start describing the approach to Evan, **but he interrupts you**. Later, Evan mentions an approach a lot like what you had in mind. He figures out how to use it effectively and decides to pursue the approach.*

Can I Contribute Here?

(Muragishi & Walton, in prep)



Gregg Muragishi
Stanford University

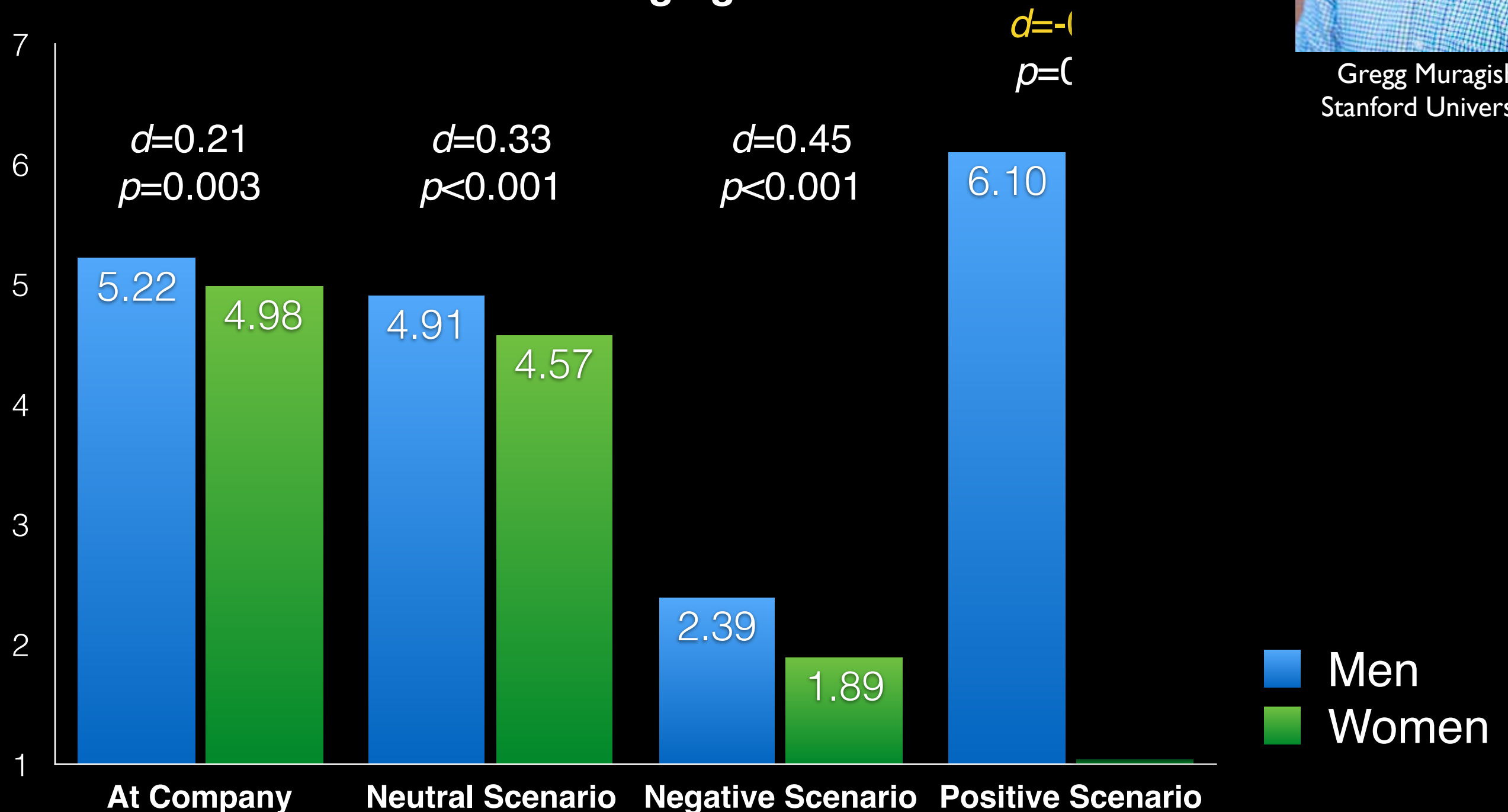
Positive Scenario

...You start describing the approach to Evan. He listens carefully and asks you follow-up questions to learn more. You bounce ideas off each other and talk through how to use the approach for this specific problem. Together you figure out how to use it effectively.

Can I Contribute Here?

(Muragishi & Walton, in prep)

Belonging



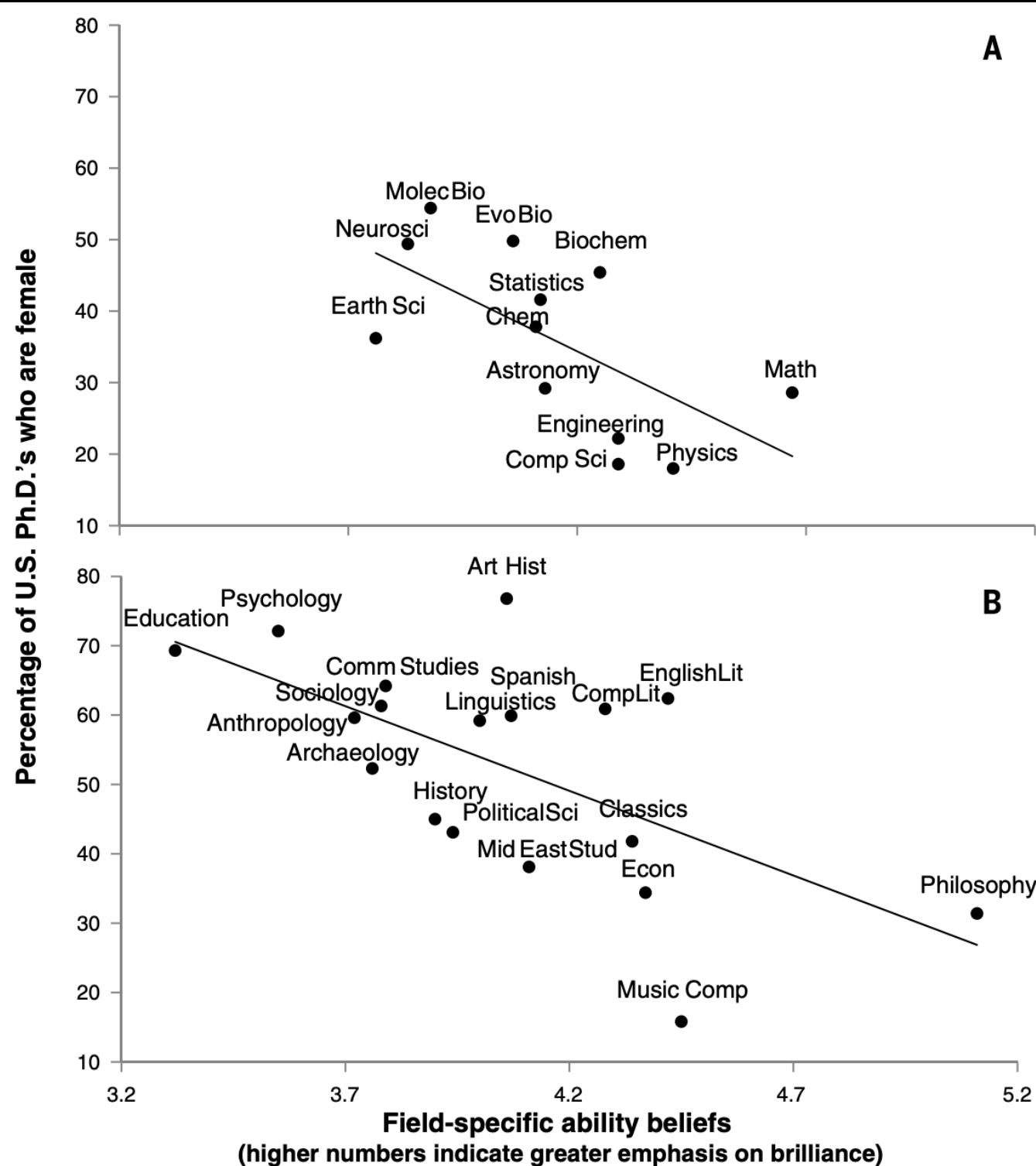
Gregg Muragishi
Stanford University

Does it take a genius?

(Leslie, Cimpian, Meyer, & Freeland, 2015, *Science*)



Sarah-Jane Leslie
Princeton



- Faculty, post-docs, and grad students surveyed ($N=1820$)
- “Being a top scholar of [discipline] requires a special aptitude that just can’t be taught.”

Perceptions of Stereotyping in Math

(Good, Rattan, & Dweck, 2012)



Catherine Good
Baruch College, CUNY



Aneeta Rattan
London Business
School

Perceptions of stereotyping

E.g., *People in my calculus class believe that females are [not] as good as males as calculus*

Perceptions of environmental entity theory

E.g., *People in my calculus class believe that people have a certain amount of math intelligence and they can't really do much to change it.*

Low Sense of
Belonging in
Math

Low Intention
to Pursue Math
in the Future

Do professors think intelligence can grow?

(Canning, Muenks, Greene, & Murphy, 2019, *Science Advances*)



Elizabeth Canning
Washington State Univ.

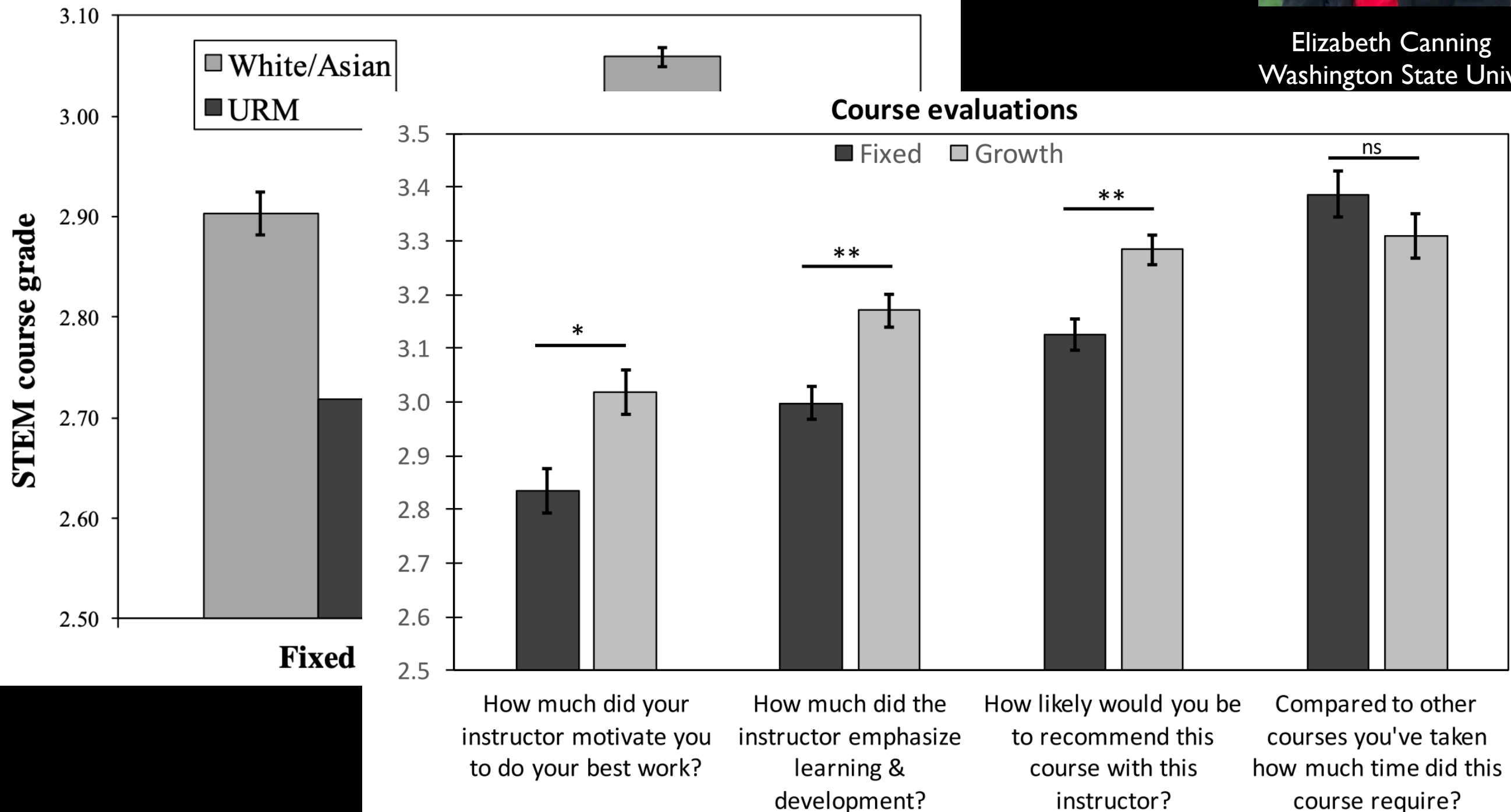
- STEM faculty surveyed ($N=150$)
 - *“To be honest, students have a certain amount of intelligence and they really can’t do much to change it.”*
- Linked to university grade records and courses evaluations

Do professors think intelligence can grow?

(Canning, Muenks, Greene, & Murphy, 2019, *Science Advances*)



Elizabeth Canning
Washington State Univ.



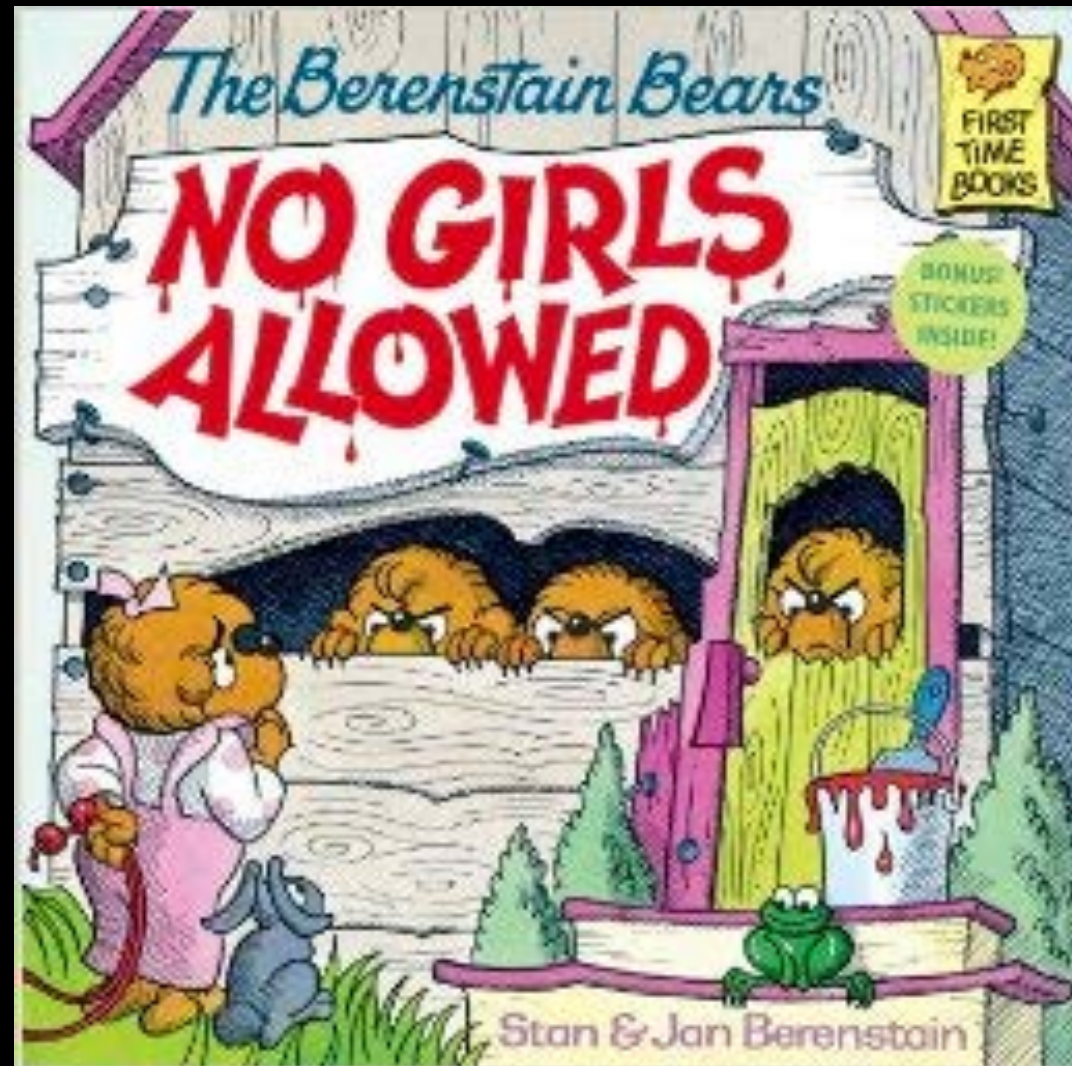
Remedy #1:

***Attend to and Change Cues
in Settings That Predictably
Provoke Feeling of Non-
Belonging***

Remedy #1:

*Attend to and Change Cues
in **Cultures** That Predictably
Provoke Feeling of Non-
Belonging*

But Many Everyday Experiences Are Ambiguous



Contexts Raise Questions; People May Construct Answers Through Experience, Even From Subtle Cues



Michelle Robinson

When I first arrived at school as a first-generation college student, I didn't know anyone on campus except my brother. I didn't know how to pick the right classes or find the right buildings. I didn't even bring the right size sheets for my dorm room bed. I didn't realize those beds were so long. So I was a little overwhelmed and a little isolated.

-Michelle Obama (2014)

Part 2

Belonging Uncertainty

(Walton & Cohen, 2007)

Second-Choice Remedy

Can we construct experiences in school and work that help people answer pressing questions about belonging adaptively?

Social-Belonging: From Fixed Quality to Process

Yes/No

- Do I belong or not?
- Does this event mean I don't belong?

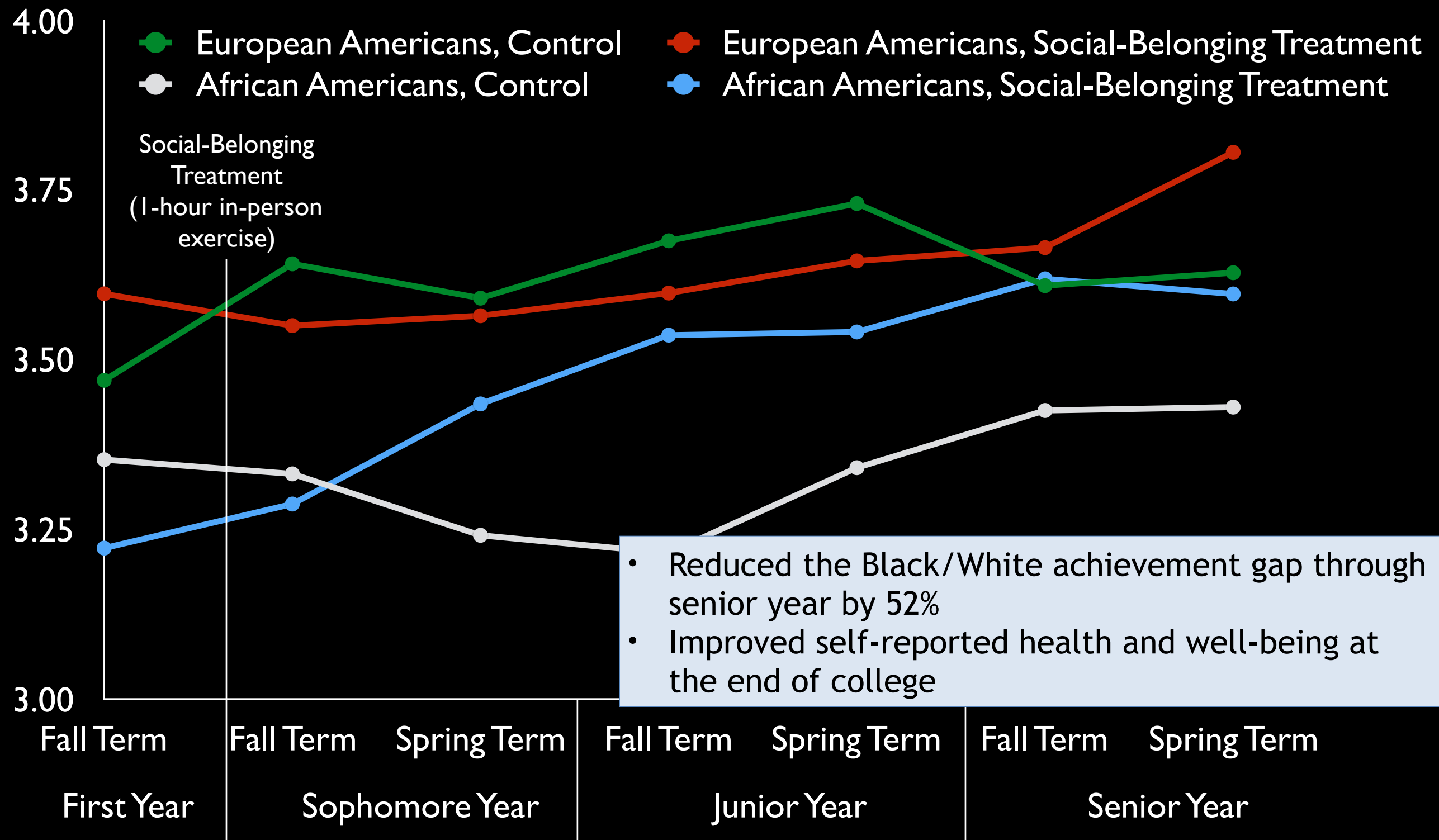
Process

- It takes time and effort
- How will I develop my belonging?

The Social Belonging Intervention

Stories + “Saying-Is-Believing”

Highly Selective College College Grade Point Average by Year*



* Original trial; many subsequent replications and extensions, with diverse populations and in diverse school and work contexts (see Walton & Brady, 2020)

Walton & Cohen (2011, *Science*)

A Deleterious Interpretation of Social Adversity

Everyone is going out without me, and they didn't consider me when making their plans. At times like this I feel like I don't belong here and that I'm alienated.

-Black female, control condition

A Deleterious Interpretation of Social Adversity

Everyone is going out without me, and they didn't consider me when making their plans. At times like this I feel like I don't belong here and that I'm alienated.

Statistical mediation:

This change in social construal statistically mediated the 3-year gain in academic performance.

Young Adulthood

(Brady, Cohen, Jarvis, & Walton, under review)

- Participants surveyed at about age 27
 - 7-9 years after participation, 3-5 years after college
 - 87% retention

Among African Americans:

	Control Condition	Treatment Condition
Career Satisfaction & Success: <i>Self-Rated Potential To Succeed in the Future*</i>	53rd percentile	69th percentile
Psychological Well-Being: <i>Life Satisfaction*</i>	4.44 (7-point scale)	5.41

* Sample measures; Composite indices yield same effects

How did students get there?

- GPA?
 - No. GPA does not predict these outcomes
- Mentorship?

Among African Americans:

	Control Condition	Treatment Condition
Did you have an academic mentor in college?	43%	84%
Did this mentorship continue after college?	4%	37%

Statistically mediates the long-term gains in life outcomes

CONTROL:

I wouldn't say I received any mentorship at [school] - not for lack of interested professors, but I didn't really seek it.

TREATMENT:

The first semester of my freshman year was very difficult for me. I was struggling academically, didn't feel like I fit in, and was unhappy with my major...I began to spend more time speaking with my freshman counselor. We really bonded, and she helped me to realize that I did belong at [school]. Thanks to her, I was able to connect better with my peers and perform better academically. We've kept in touch ever since.

A close-up photograph of a person's hands shaping a light-colored clay bowl on a pottery wheel. The hands are positioned to guide the clay as it rotates. In the background, other pottery items and a blurred workshop environment are visible.

**Like clay, meanings are
malleable but can become fixed**

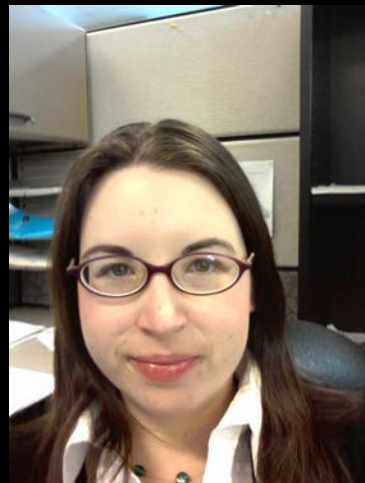
**Especially when they get “baked into”
the structure of people’s lives**

**i.e., cultures self-
reinforce**

Women in Male-Dominated Engineering Fields



Christine Logel
Waterloo



Jen Peach
Waterloo



Mark Zanna
Waterloo



Steve Spencer
Ohio State



Adaptation for Women in Engineering

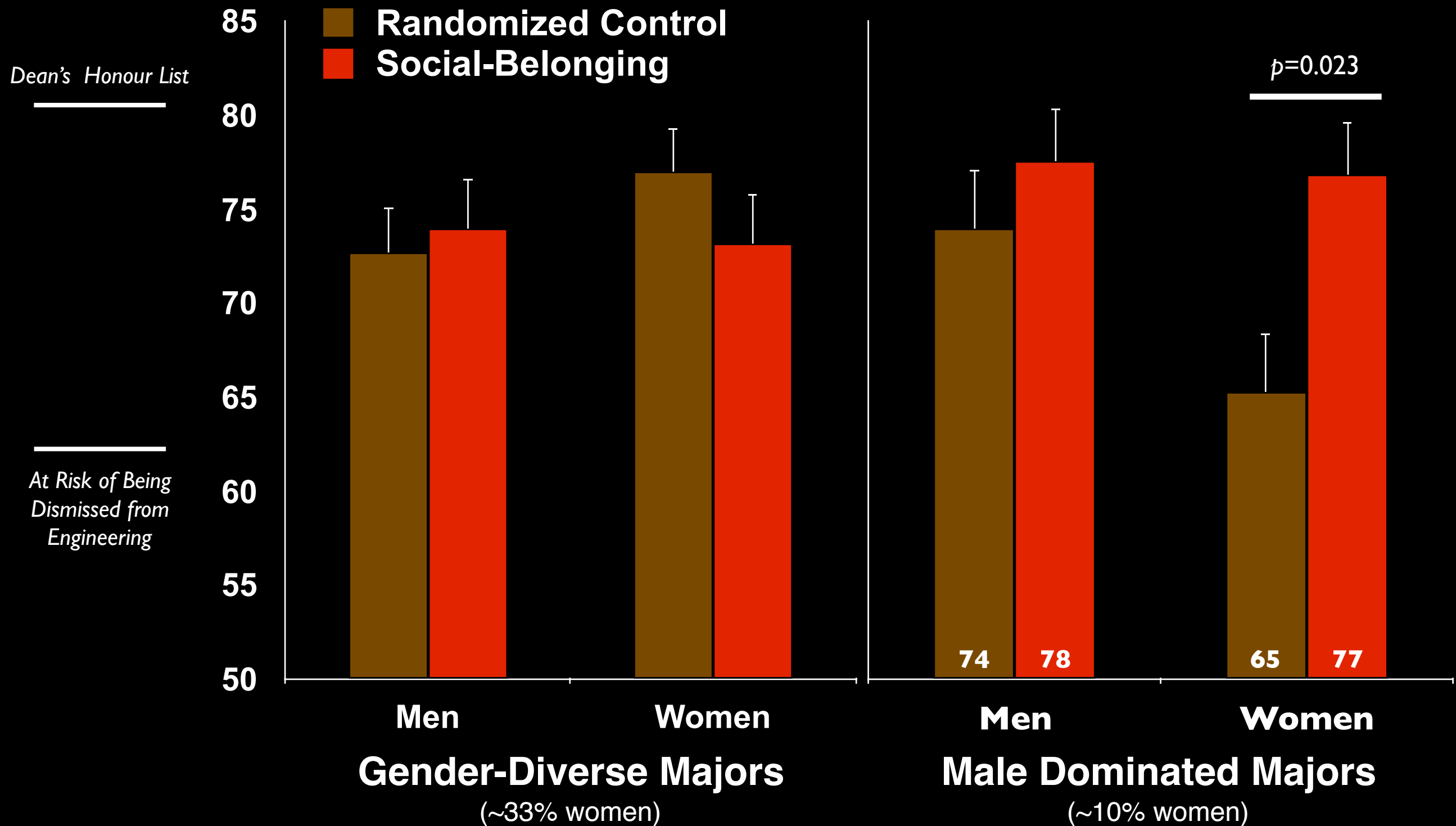
(Walton, Logel, Peach, Spencer, & Zanna 2015)

- Extensive focus groups and interviews to identify novel themes

Insight	Example	Optimization (revision to intervention message)
1. Women felt excluded from male peer groups	Students described feeling excluded from male groups, not feeling “one of the guys”	Describe feeling excluded from a male subgroup in a conversation about hockey. But when the conversation turned to a relevant engineering TV show, and realizing that “even though I don’t share their love of hockey...we do have a lot in
2. Women experienced sexist disrespect	Students described making a “classy” women in engineering calendar, and then having a male professor make a sexist remark about and a female professor tell us “not to present [ourselves] as women first if [we] wanted to be taken seriously as engineers	Seed alternative attributions for what could feel like sexist disrespect. Male student describes feeling dismissed by a male professor—and seen as “dumb”—but later learns that in fact the professor just wasn’t a good teacher.

First-Year GPA in Engineering

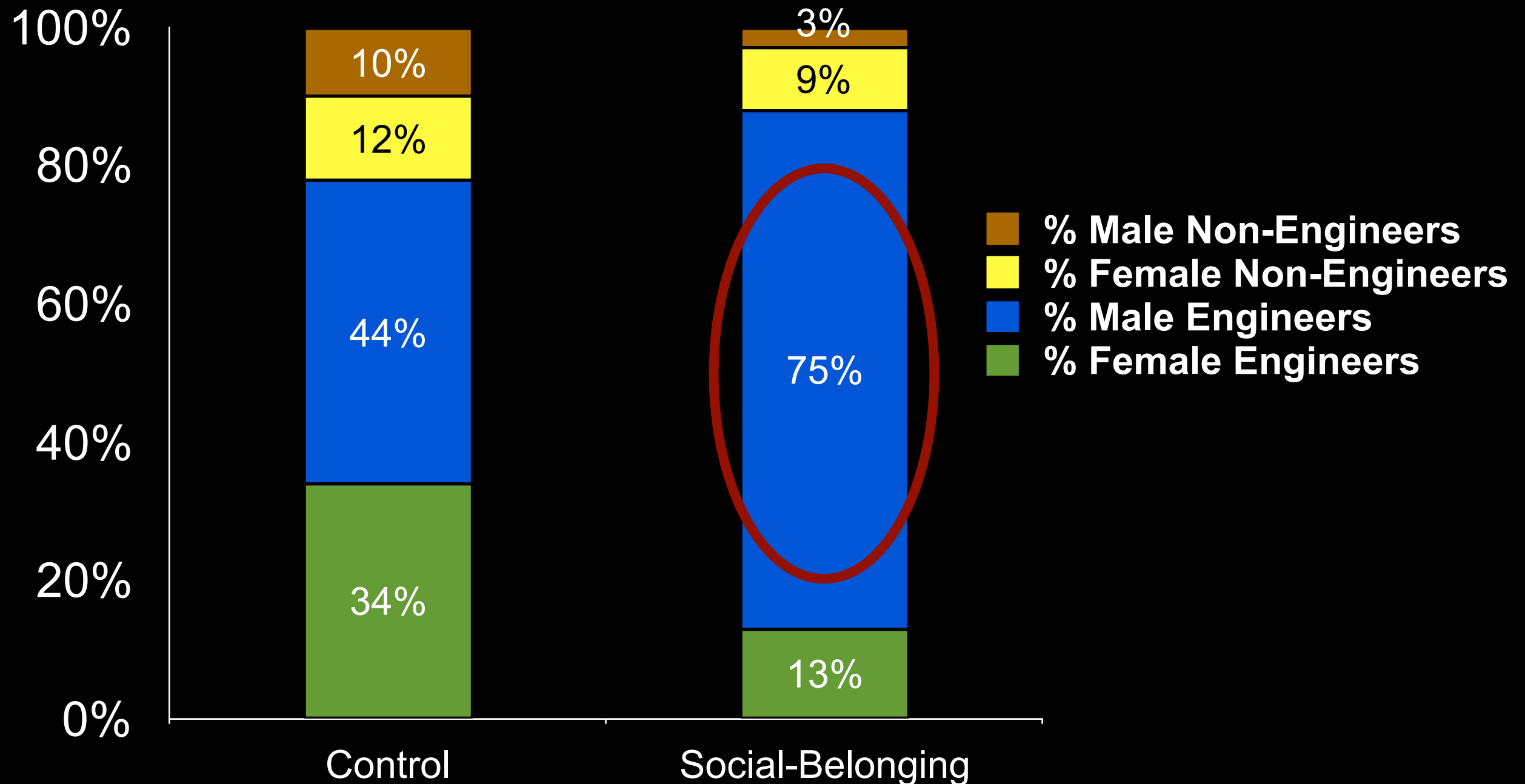
(Controlling for within-major mean)



Women's Friendship Groups

(controlling for preintervention)

In Male-Dominated Majors



Intervening at Institutional Scales

Founders and Social-Belonging PIs



Christine Logel
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University of Texas
at Austin



Omid Fotuhi
University of
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Co-Founder



Parker Goyer
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Sara Woodruff
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CTC



Rob Urstein
Board Member
CTC



Shannon Brady
Probation Project PI
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Belonging Data Analysis



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Natasha Krol (emeritus)
Alice Li (emeritus)

The CTC Belonging Trial

College and University Partners



Cornell University



Dartmouth



ALBION
COLLEGE



Reasonably generalizes to **907**
4-year non-profit degree-
granting colleges and
universities in the United
States (b index=0.80)

LAMAZOO
COLLEGE

an
ity

sburgh



Yale University



UNIVERSITY OF
OREGON



California State University
DOMINGUEZ HILLS

Funding Partners

School
Partners



MINDSET
SCHOLARS
NETWORK

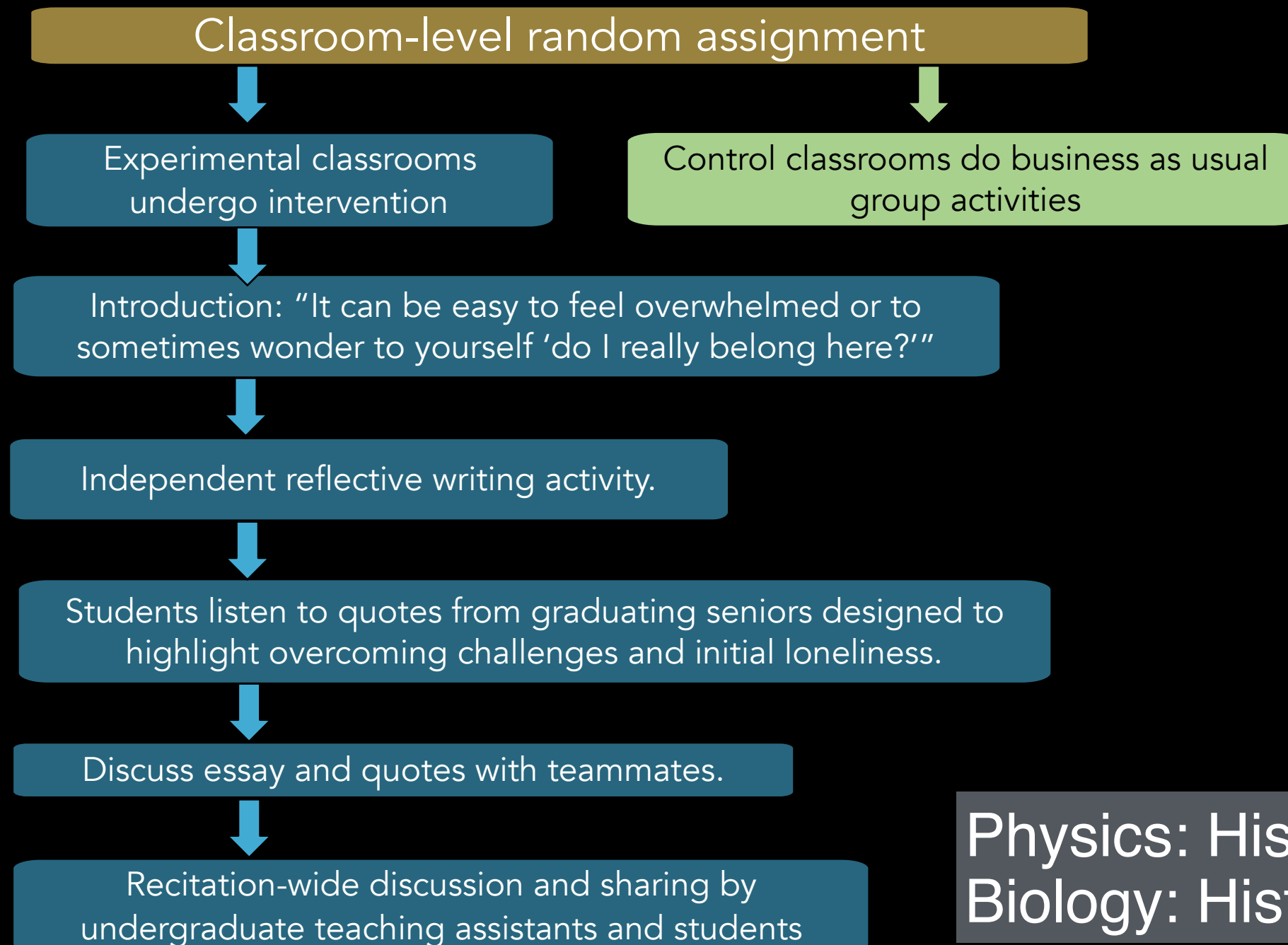
Technical Support



Facilitating Belonging in Large Introductory STEM Classes

- ▶ **Kevin Binning (Psychology)**
- ▶ Chandralekha Singh (Physics)
- ▶ Emily Marshman (Physics)
- ▶ Yasemin Kalender (Physics)
- ▶ Omid Fotuhi (LRDC)
- ▶ Nancy Kaufman (Biology)
- ▶ Erica McGreevy (Biology)
- ▶ Susie Chen (Psychology)
- ▶ Lisa Limeri (Biology)
- ▶ Laura Betancur (Psychology)

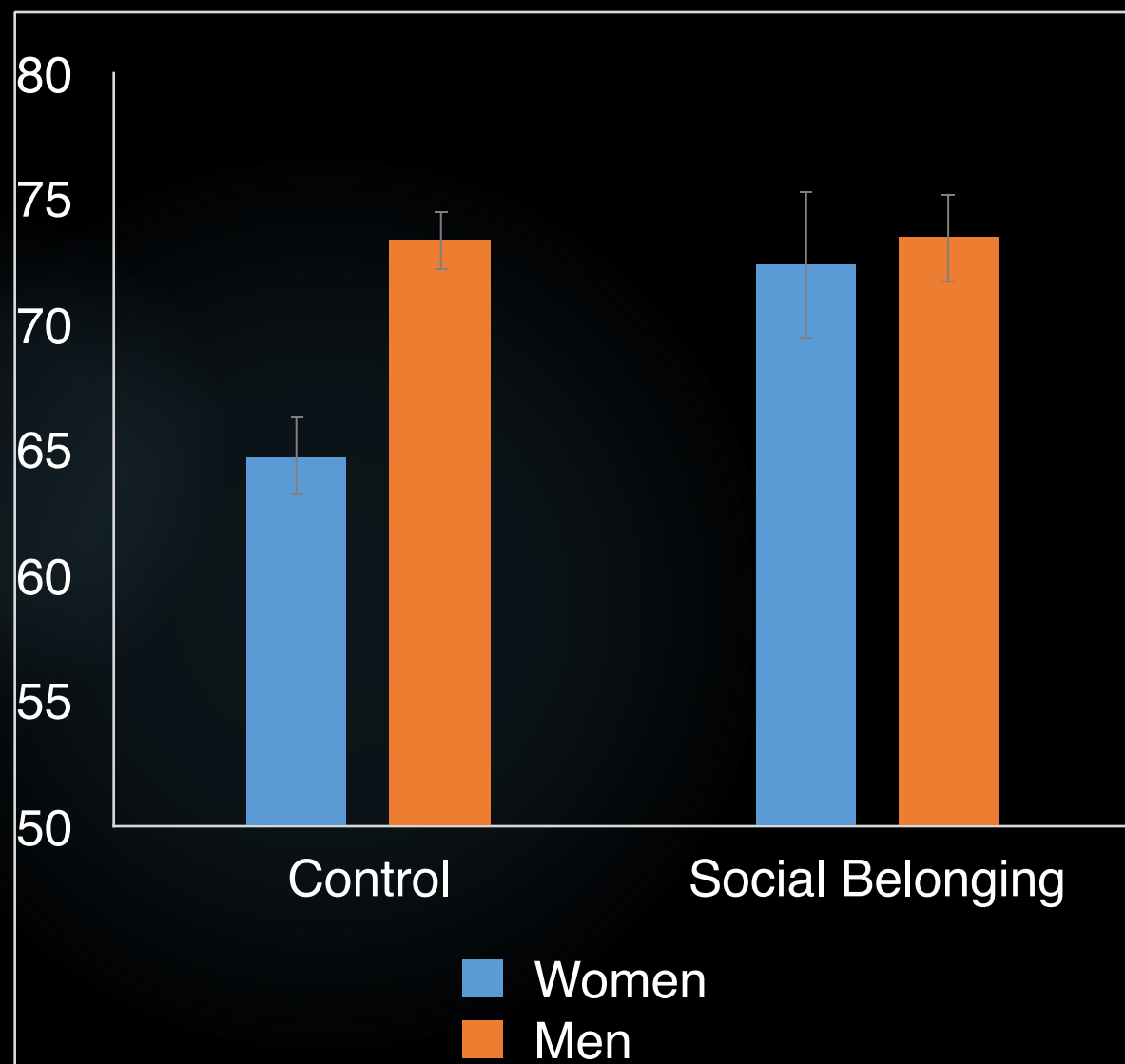
Classroom Based Belonging Intervention



Physics: Historic Gender Gap
Biology: Historic Race Gap

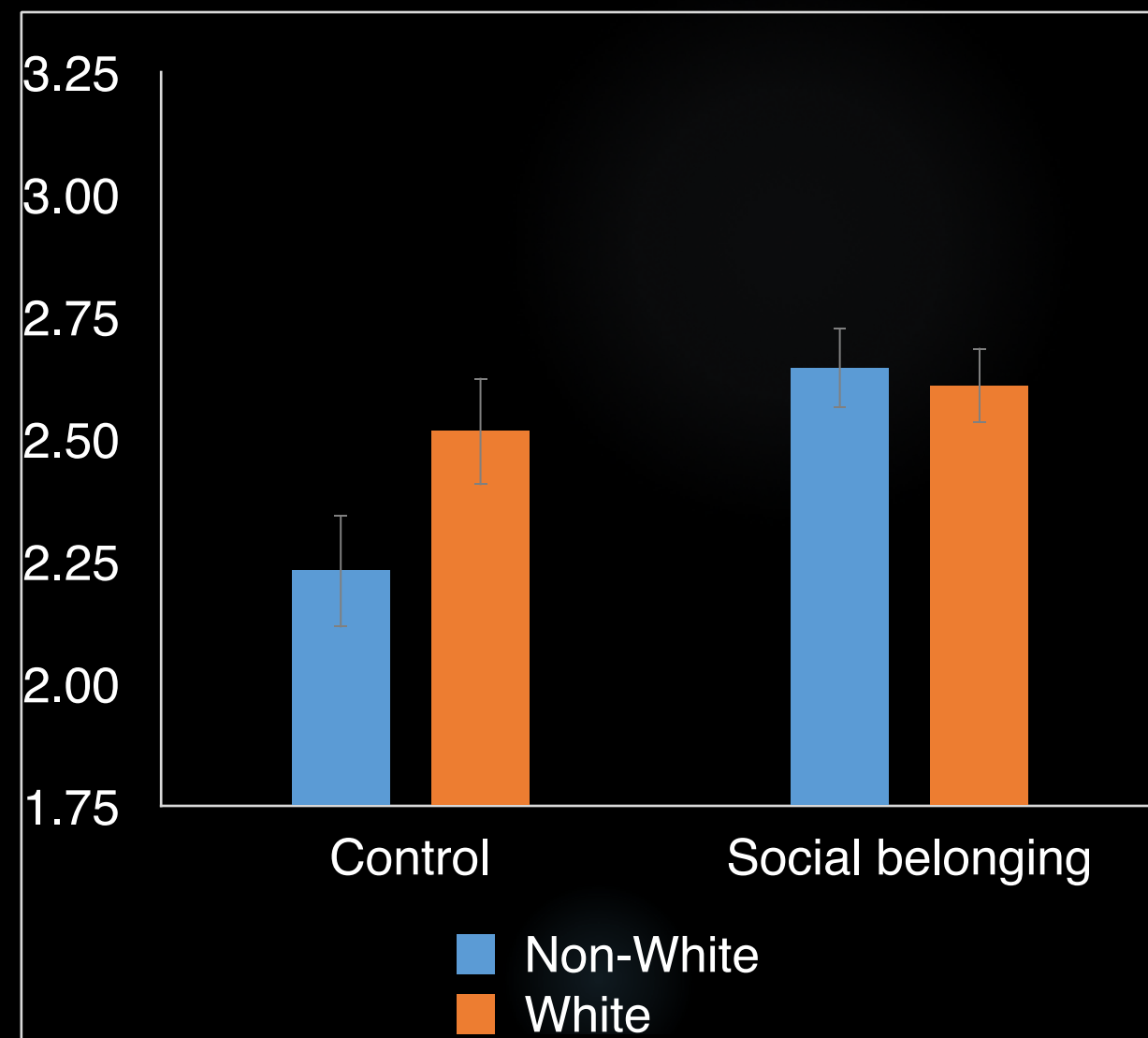
Average Course Grade

Physics*



*Largest gains for women lowest in self-efficacy

Biology



What does inclusion require?

1. Anticipate and remedy toxic cues in settings that signal a narrow or exclusive representation of who belongs.
2. Help people make sense of everyday challenges in adaptive ways that support their belonging.
3. Ensure that those adaptive views are legitimate:
The context must *afford* belonging to diverse people.

Part 3

**How should we think
about “merit”?**

The Atlantic

U.S.

Race and the Schooling of Black Americans

More than half of black college students fail to complete their degree work—for reasons that have little to do with innate ability or environmental conditioning. The problem, a social psychologist argues, is that they are undervalued, in ways that are sometimes subtle and sometimes not

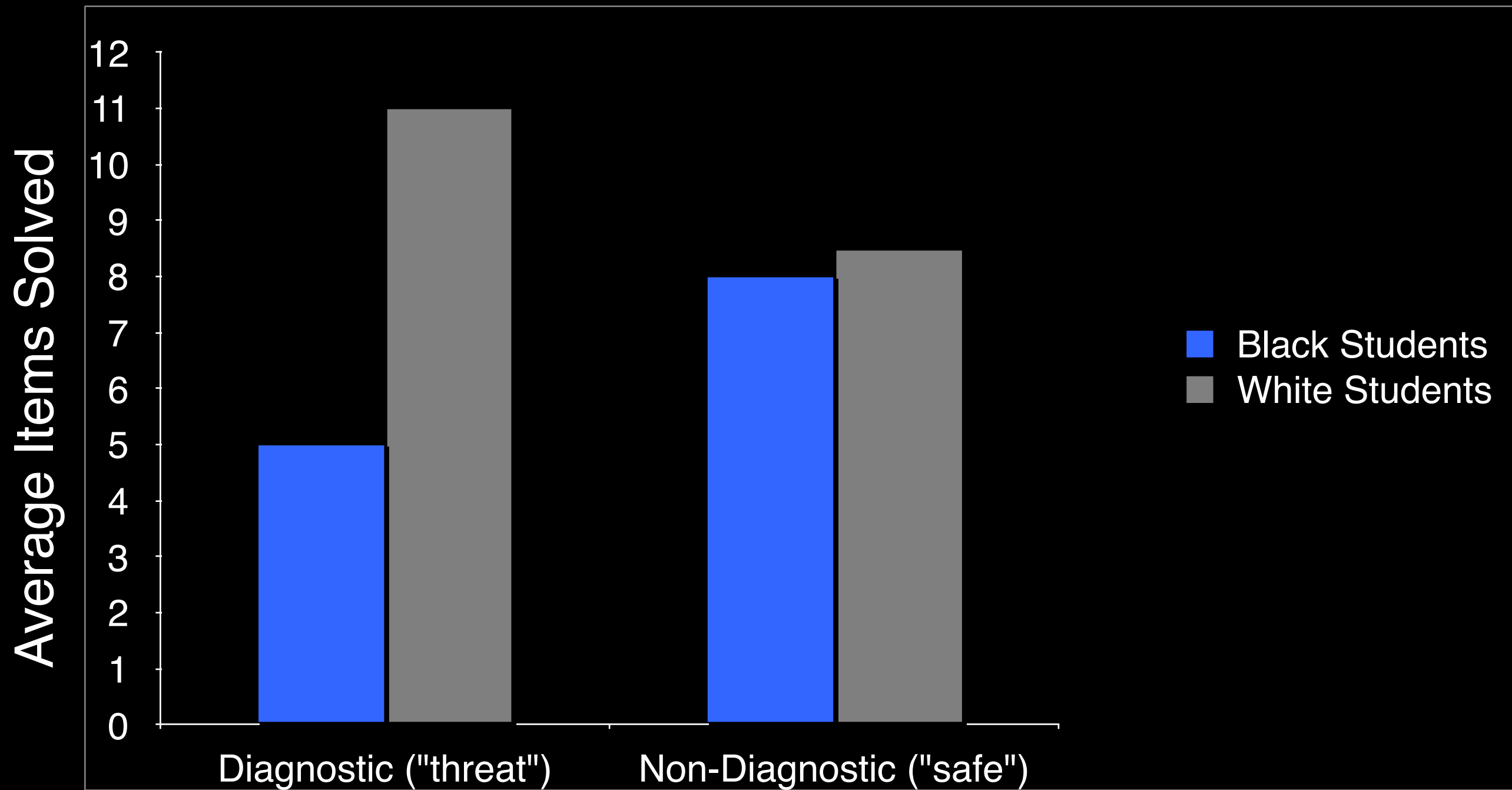
CLAUDE M. STEELE
APRIL 1992 ISSUE

My former university offered minority students a faculty mentor to help shepherd them into college life. As soon as I learned of the program, I volunteered to be a mentor, but by then the school year was nearly over. Undaunted, the program's eager staff matched me with a student on their waiting list—an appealing nineteen-year-old black woman from Detroit, the same age as my daughter. We met finally in a campus lunch spot just about two weeks before the close of her freshman year. I realized quickly that I was too late. I have heard that the best way to diagnose someone's depression is to note how depressed you feel when you leave the person. When our lunch was over, I felt as gray as the snowbanks that often lined the path back to my office. My lunchtime companion was a statistic brought to life, a living example of one of the most disturbing facts of racial life in America today: the failure of so many black Americans to thrive in school. Before I could lift a hand to help this student, she had decided to do what 70 percent of all black Americans at four-year colleges do at some point in their academic careers—drop out.



Claude Steele
Stanford University

Effect of Test Description

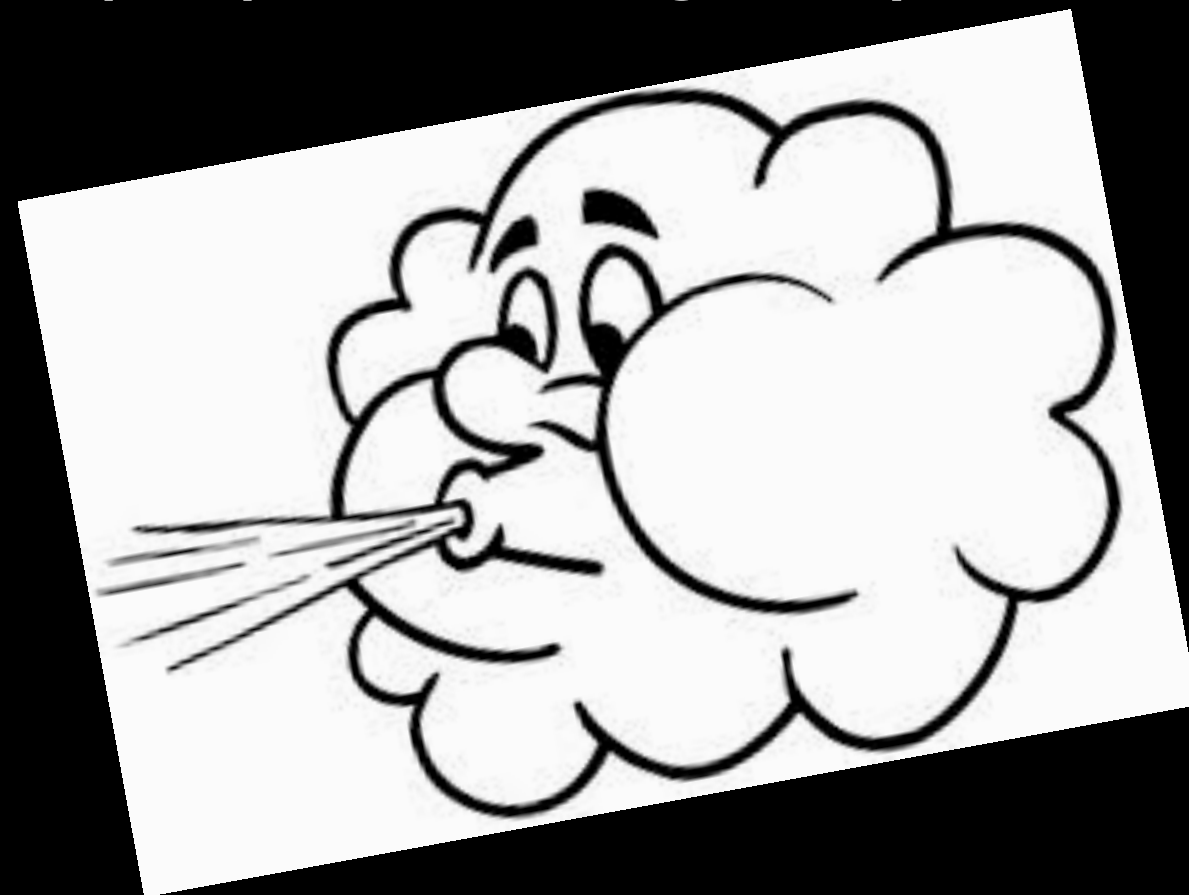


Steele & Aronson, 1995

An Implication of Identity Threat:

(Walton & Spencer, 2009)

- **Latent Ability**
 - Typical measures of merit (e.g., grades, test scores) underestimate the true ability of people from negatively stereotyped groups



Meta-Analysis 1: Stereotype Threat Experiments

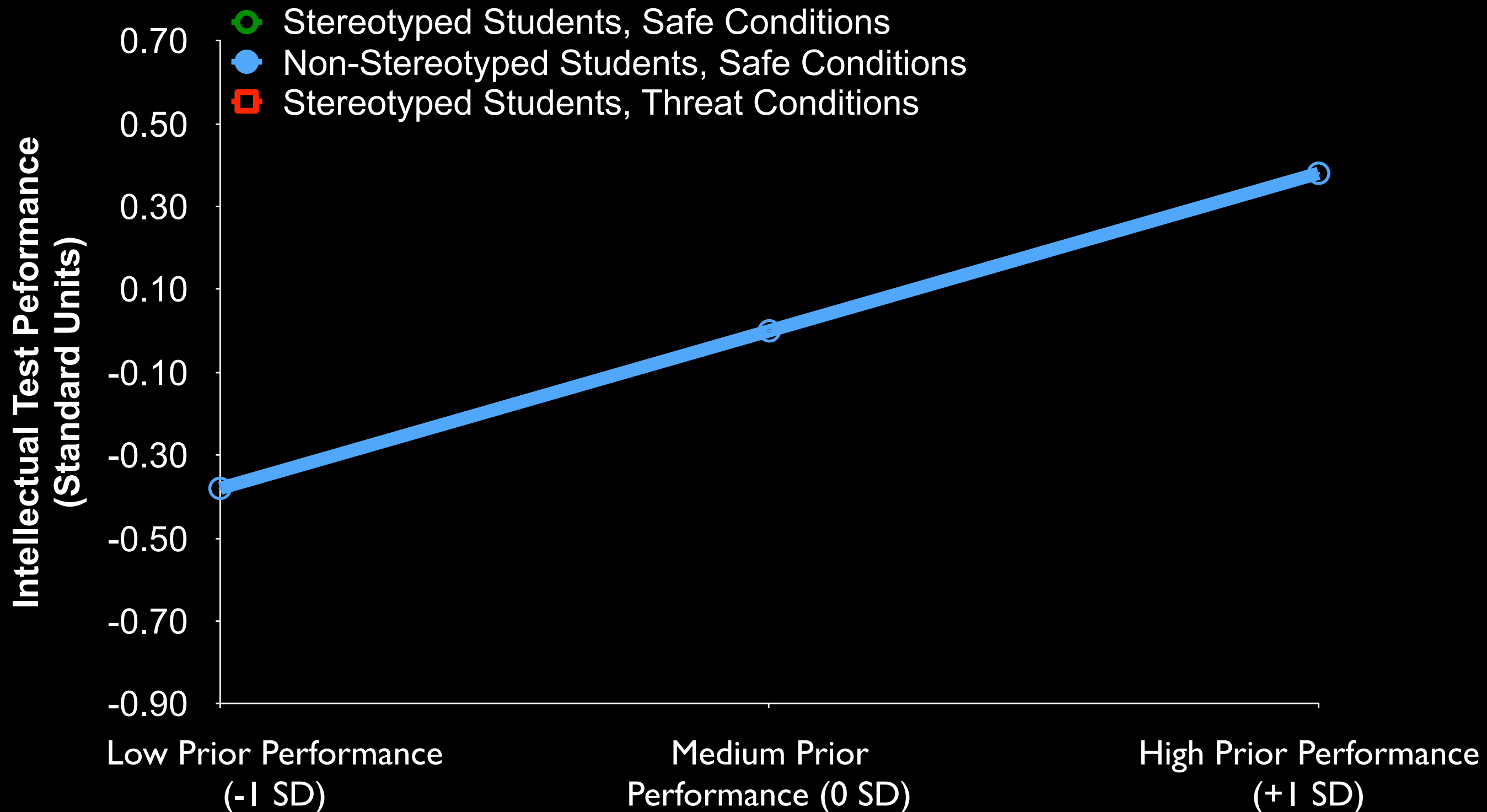
(Walton & Spencer, 2009)

- 3,180 participants in 39 experiments
 - Stereotyped students (e.g., various ethnic minorities, girls, women)
 - Non-stereotyped students (e.g., Whites, men)
- Diverse populations
 - Reside in 5 countries (Canada, France, Germany, Sweden, US)
 - Elementary school students to college students
- Two experimental conditions
 - Stereotype Threat Condition (“threat” condition)
 - No Stereotype Threat Condition (“safe” condition)
- Outcome: Performance on an intellectual test
- Assess performance on a prior measure of academic achievement (e.g., college students’ SAT scores)

Meta-Analysis 1: Stereotype Threat

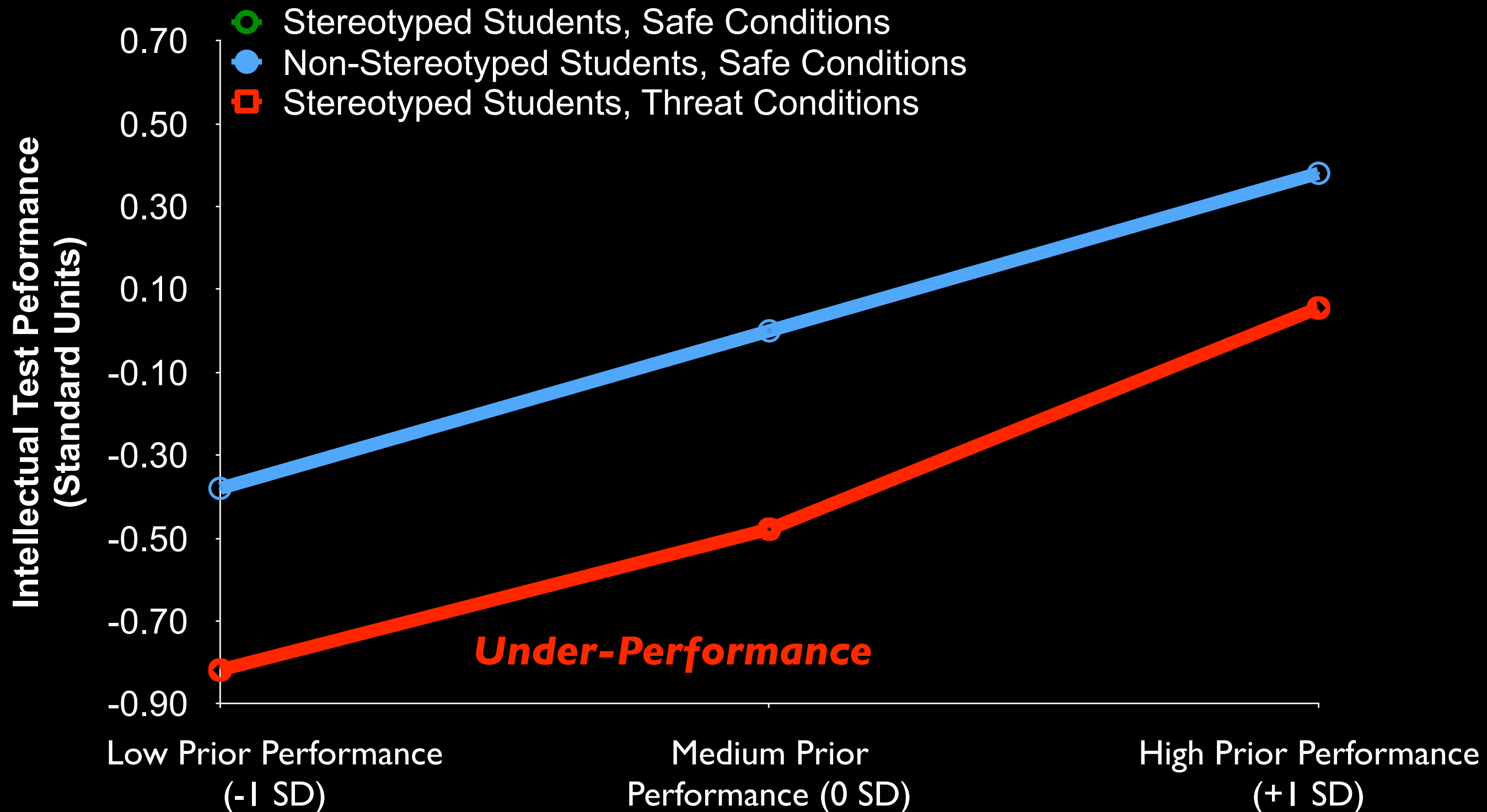
Laboratory Experiments

(3,180 participants in 39 experiments; Walton & Spencer, 2009 *Psychological Science*)



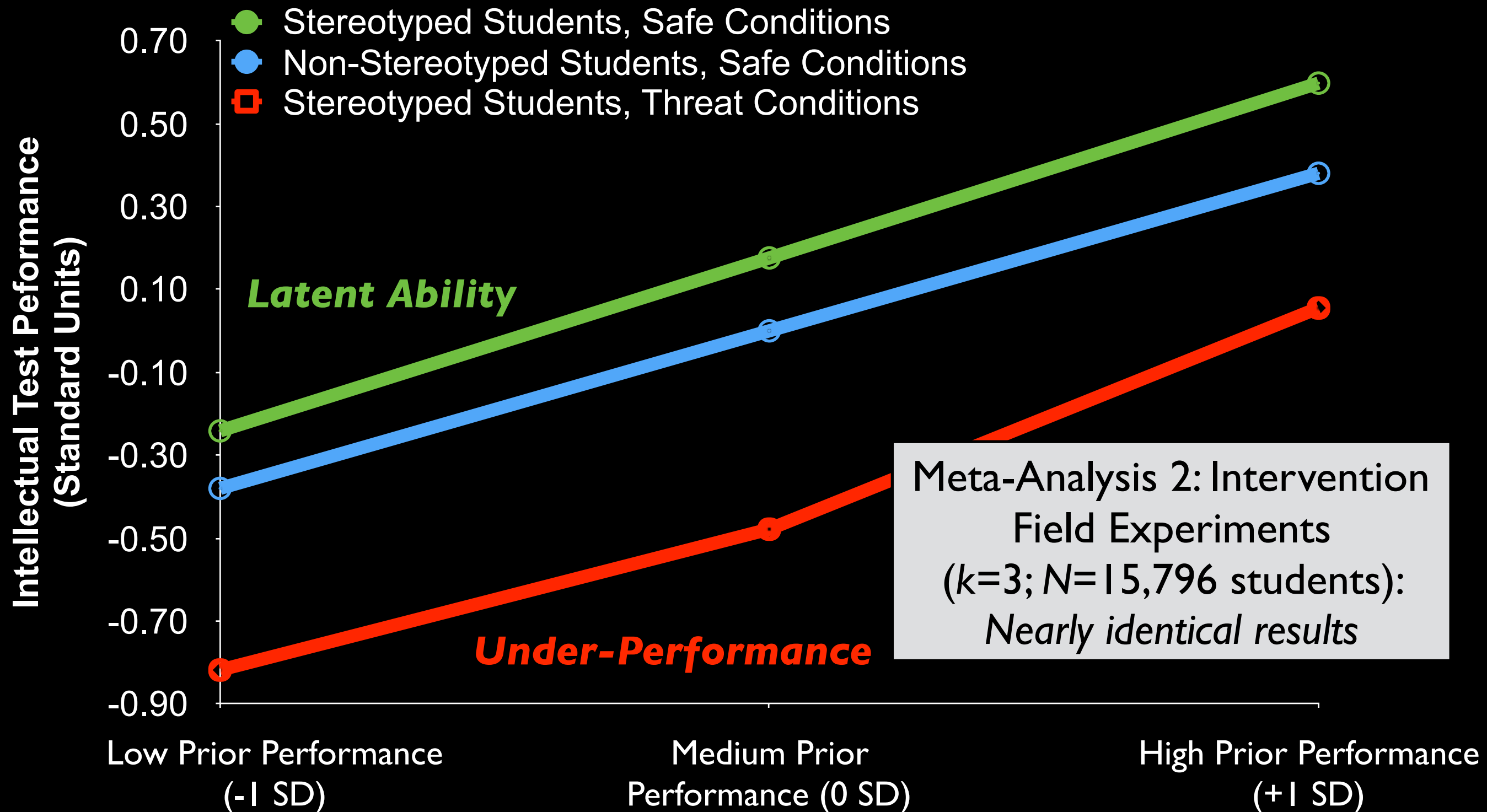
Meta-Analysis 1: Stereotype Threat Laboratory Experiments

(3,180 participants in 39 experiments; Walton & Spencer, 2009 *Psychological Science*)



Meta-Analysis 1: Stereotype Threat Laboratory Experiments

(3,180 participants in 39 experiments; Walton & Spencer, 2009 *Psychological Science*)



Implications for Understanding Group Differences

- Negatively stereotyped students have enormous, unrealized academic potential
- This potential is hidden by bias in common academic environments
- How large is the bias?
 - The effect sizes obtained ($.17 \leq d \leq .18$) almost certainly underestimate the true effect

How large is the bias?

(Walton, Spencer, & Erman, 2013)



SAT-Math:
600 = ~620-630



SAT:
1800 = ~1850-1890



What should we do about it?

- If you treat biased measures as valid, you leave talent on the table!
- *Affirmative meritocracy* (Erman & Walton, 2015; Walton, Spencer, & Erman, 2013)
 - Taking this bias into account can promote meritocracy *and* diversity at once

**Cultures have many
mechanisms for
reproducing themselves**

**We need smart and
intentional efforts to
interrupt problematic cycles**

Thank you