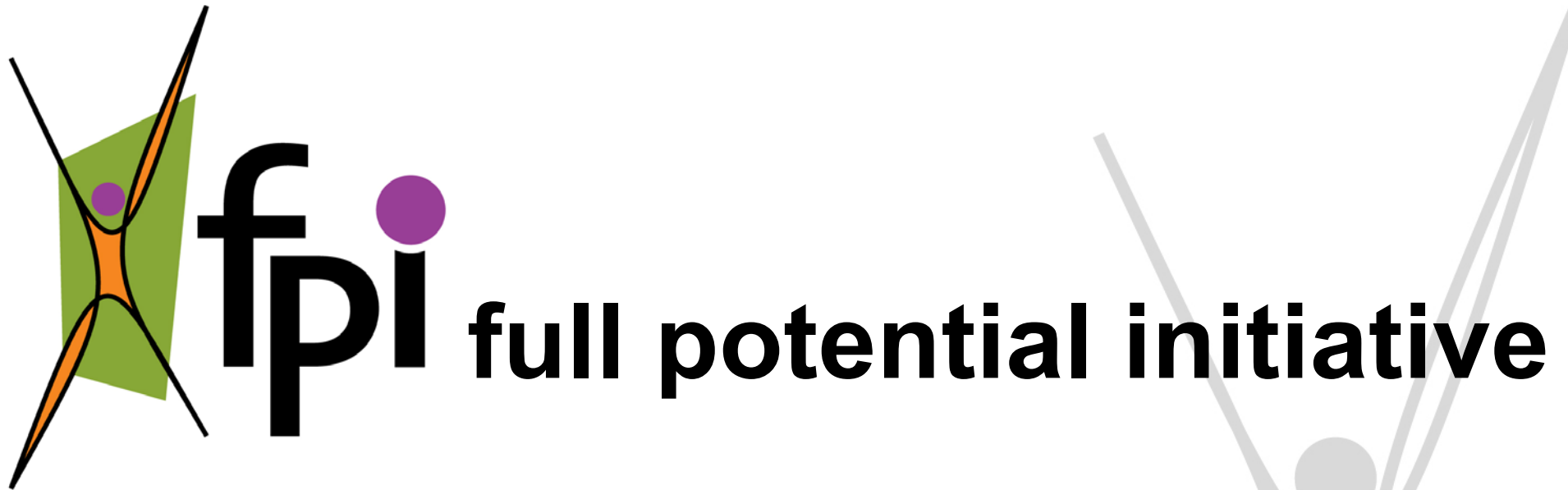


Implicit Bias in Science: The Power of Automatic, Unintended Mindsets

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OXIDE

National Diversity Equity Workshop
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Brian Nosek & Fred Smyth

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fullpotentialinitiative.org

Take Home about Implicit Associations

- 1) Humility: Implicit associations pervasive
- 2) Changeable
- 3) Measurable
- 4) Related to STEM outcomes
- 5) Mindfulness matters

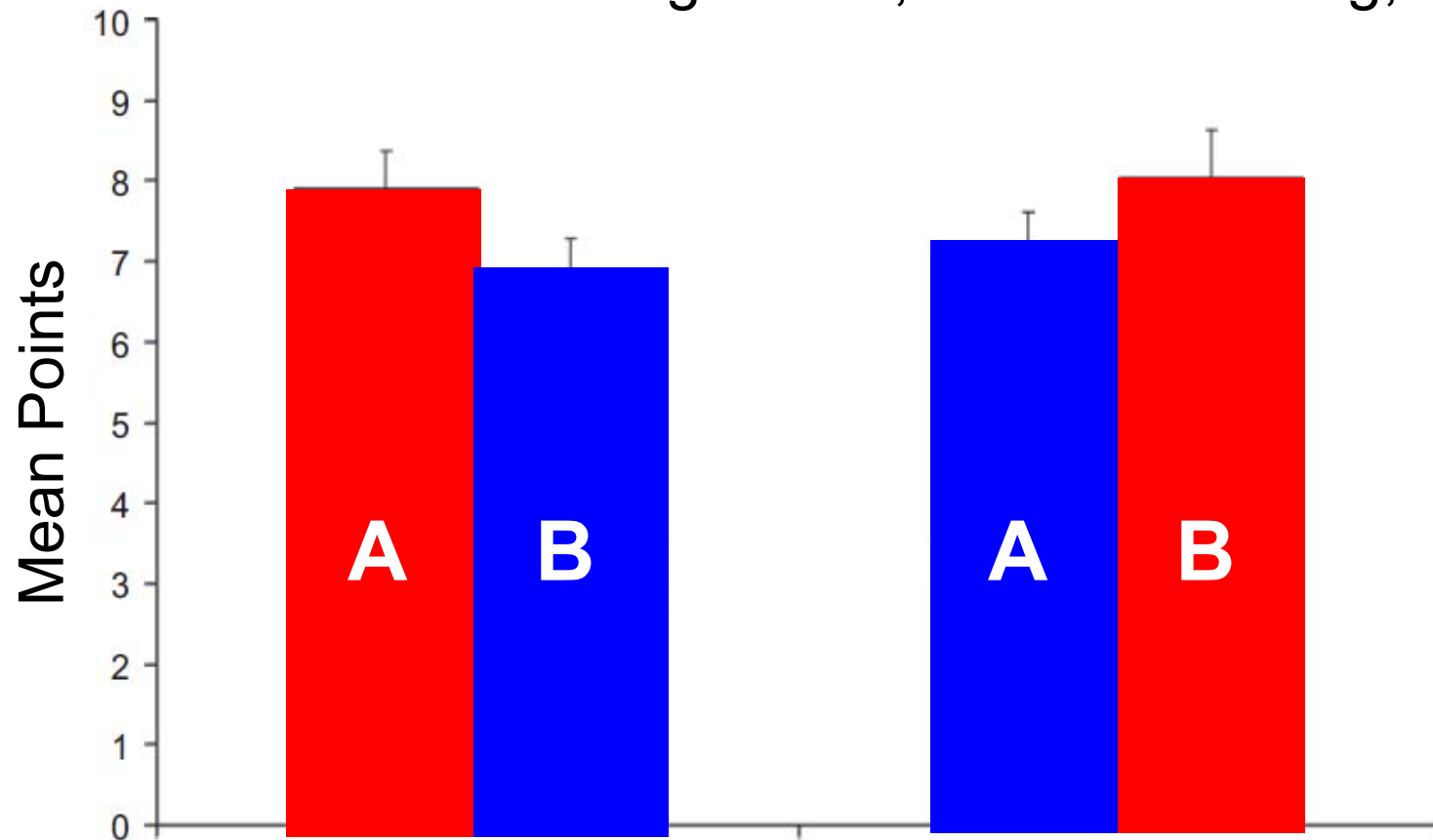
Who will win?



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Competitor A wins...IF he's wearing red

Hagemann, Strauss & Leing, 2008



Implicit Bias

- Taekwondo referees unaware
- 1977 early demonstrations:
- 2009 pervasive influence:
- Livelihoods and lives



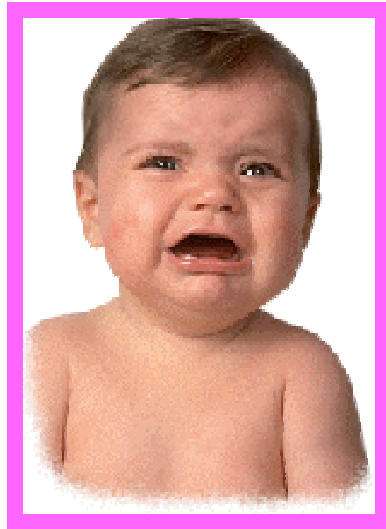
Goldin & Rouse, 2000



Payne, 2006

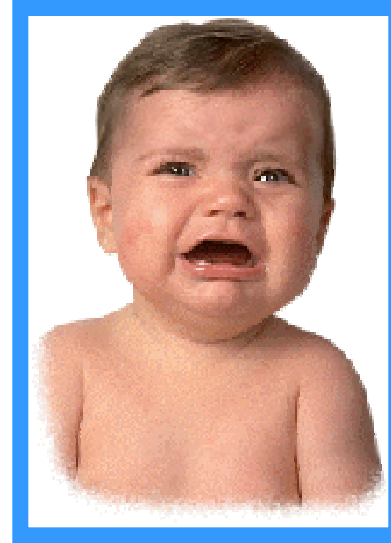
Implicit Stereotypes

Debbie



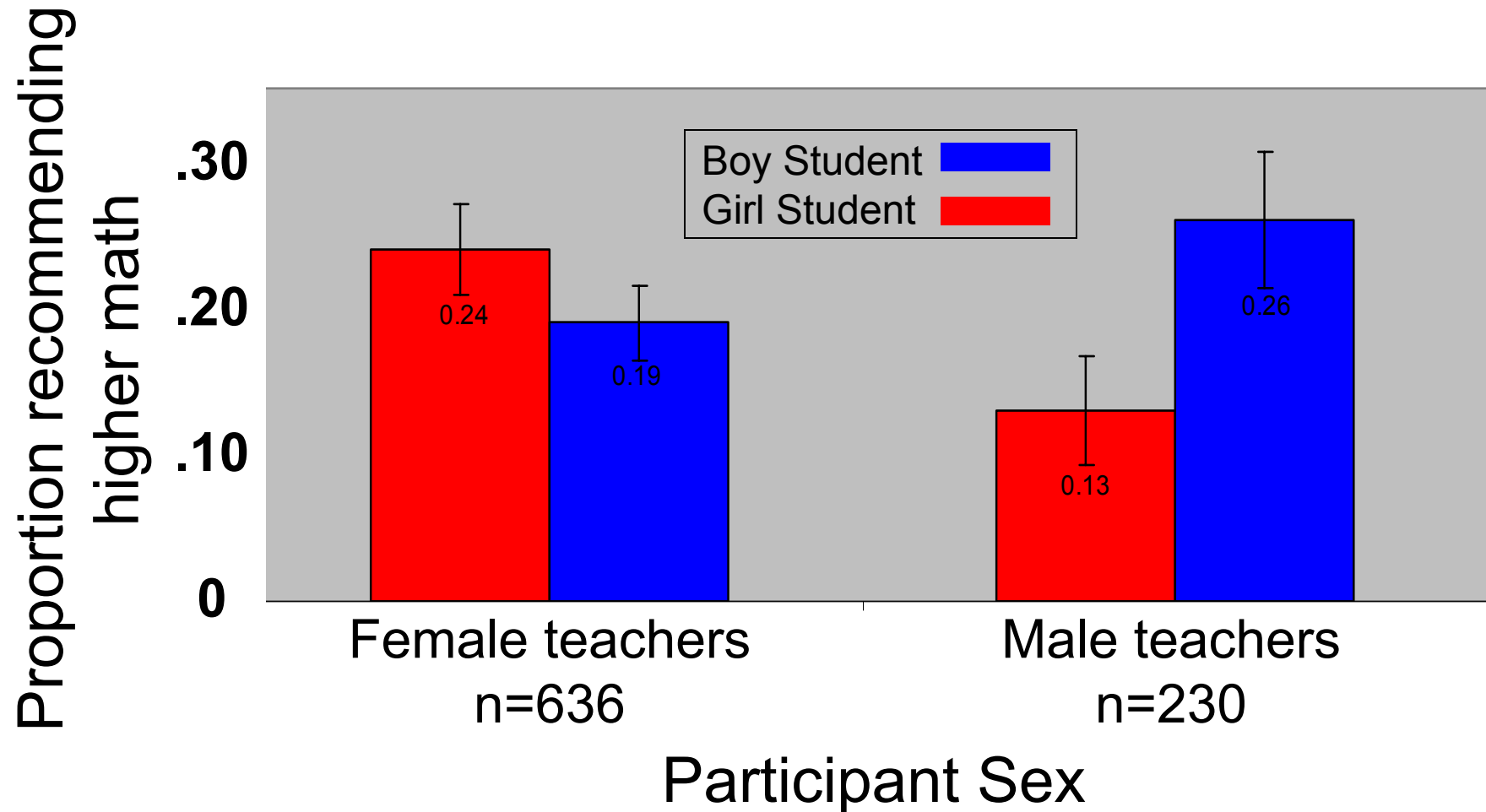
“Afraid”

Danny



“Angry”

Teachers' math placement decisions for a precocious 6th grader



Smyth, Hawkins & Nosek, 2009

Measuring Implicit Associations

Implicit Association Test (IAT)

Greenwald, McGhee & Schwarz, 1998

Green Bay or Pittsburgh?

Steelers

Packers

Left



Right

Steelers

Left



Packers

Right

Good

Left



Bad

Right

Good

Left



Bad

Right

Steelers

Good

Left



Packers

Bad

Right

Steelers

Good

Left



Packers

Bad

Right

Packers

Good

Left

Steelers

Bad

Right

Which sorting is easier?

Steelers fans

Steelers

Good

Packers

Bad

Packers fans

Packers

Good

Steelers

Bad

Project Implicit®



Demonstration

The demonstration site for the Implicit Association Test. Click this button to learn more about implicit associations and try out some sample tasks. Or, go directly to our featured task: [Fat-Thin IAT](#).

Research

The research site for Project Implicit. Click this button to participate in on-going research measuring implicit associations for a variety of topics.



implicit.harvard.edu/implicit/

Group Demonstration of Implicit Gender-Science Bias

2 Counter-balanced Conditions

Say 'LEFT' for

science

OR

Male

Say 'RIGHT' for

humanities

OR

Female

Then...

Say 'LEFT' for

science

OR

Female

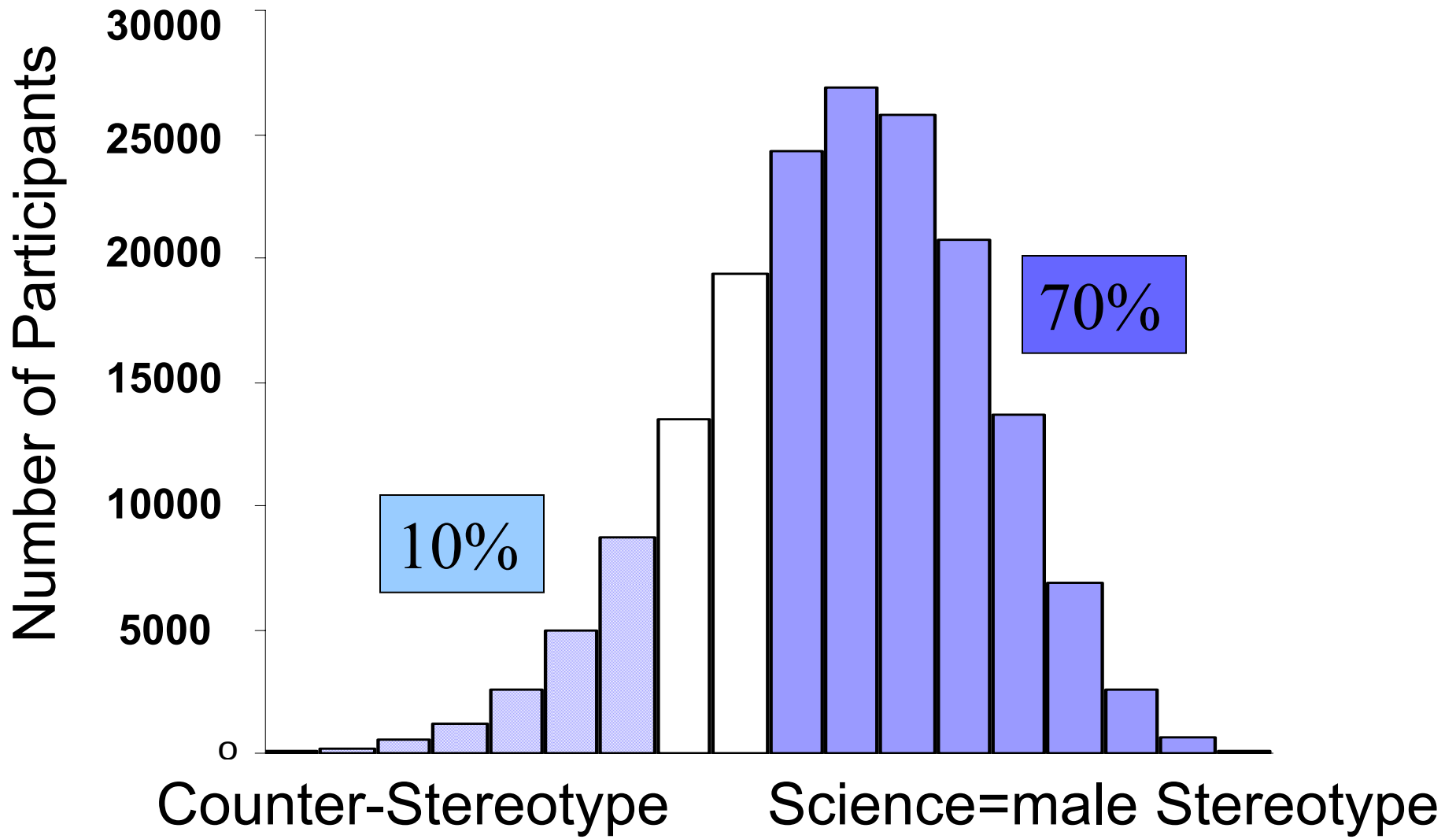
Say 'RIGHT' for

humanities

OR

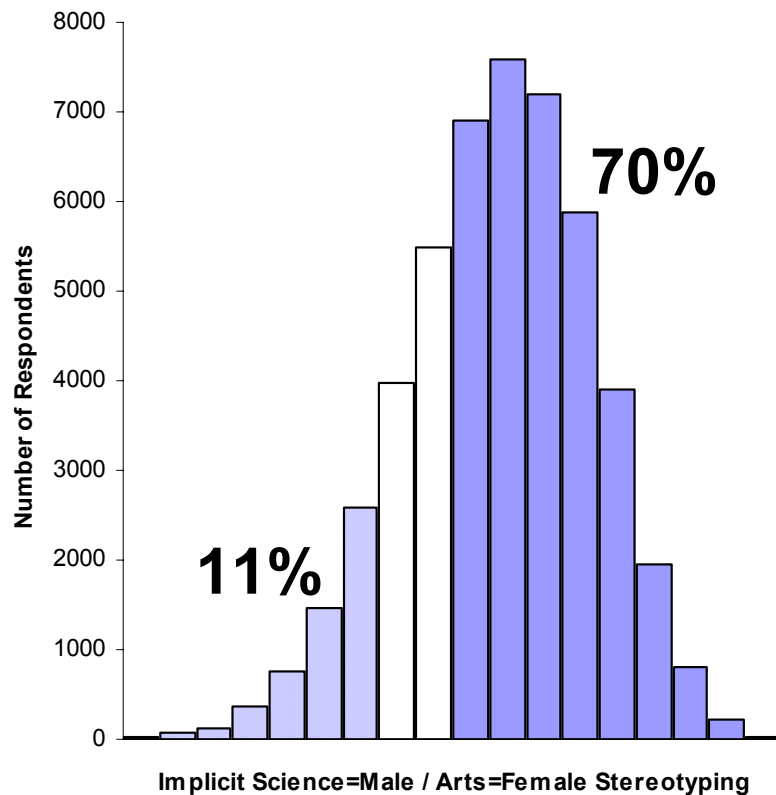
Male

Gender-Science on Project Implicit

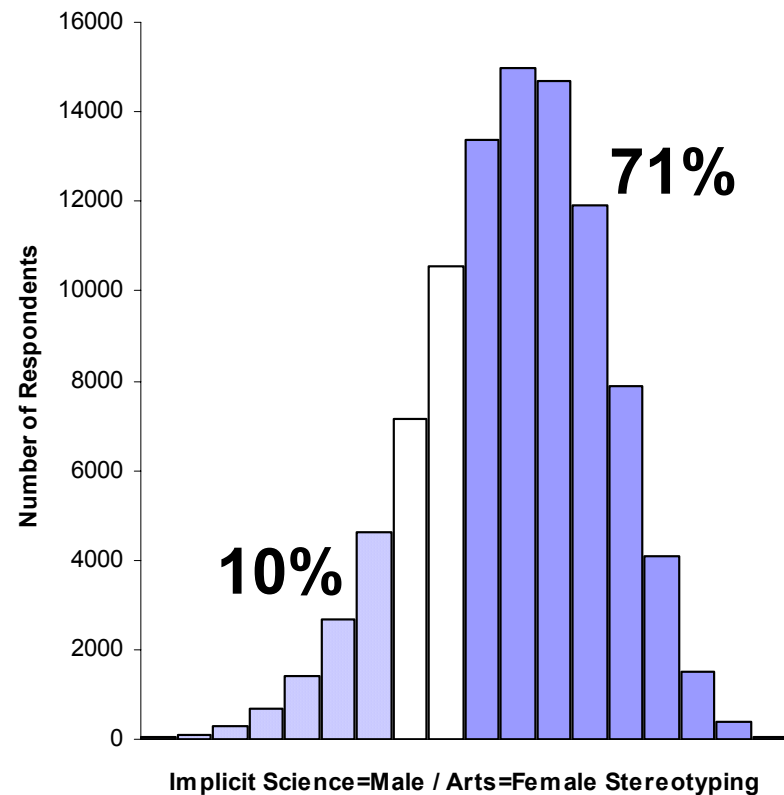


Same for Men and Women?

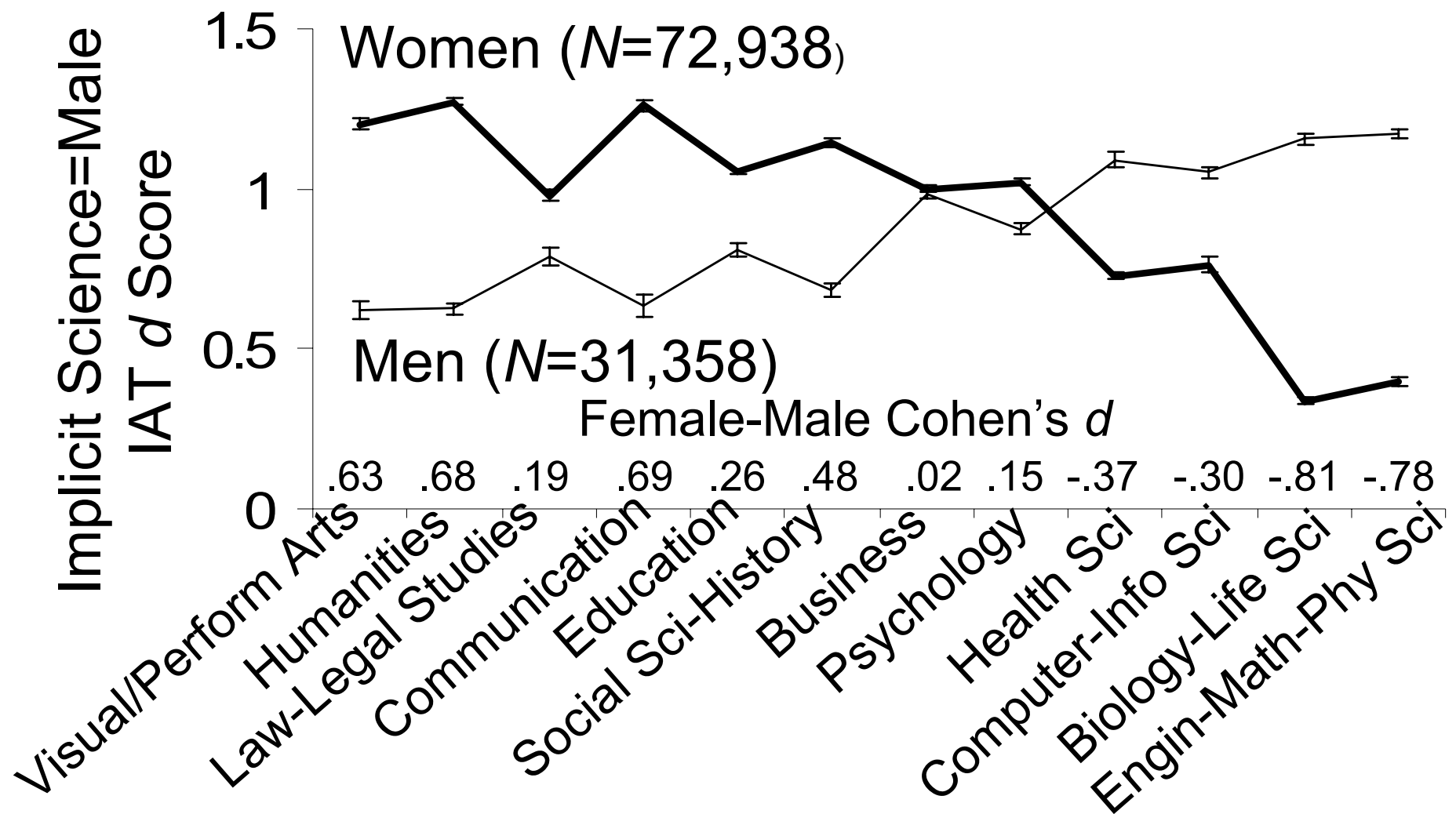
Male Respondents



Female Respondents



Not the same if academic identity
is taken into account.



Major Field of Highest Degree

Smyth, Greenwald & Nosek, 2010

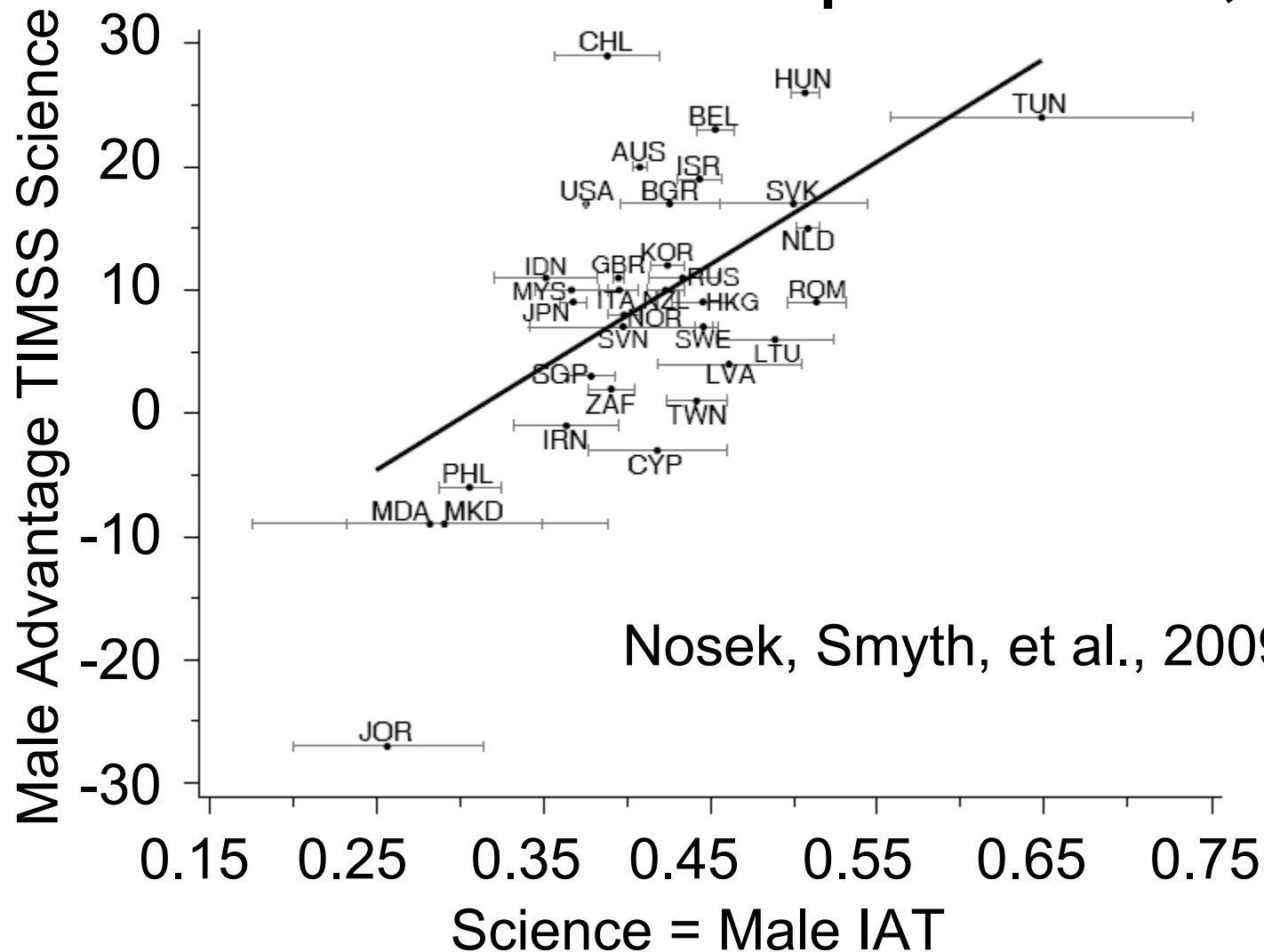
Environment Matters

International Variation



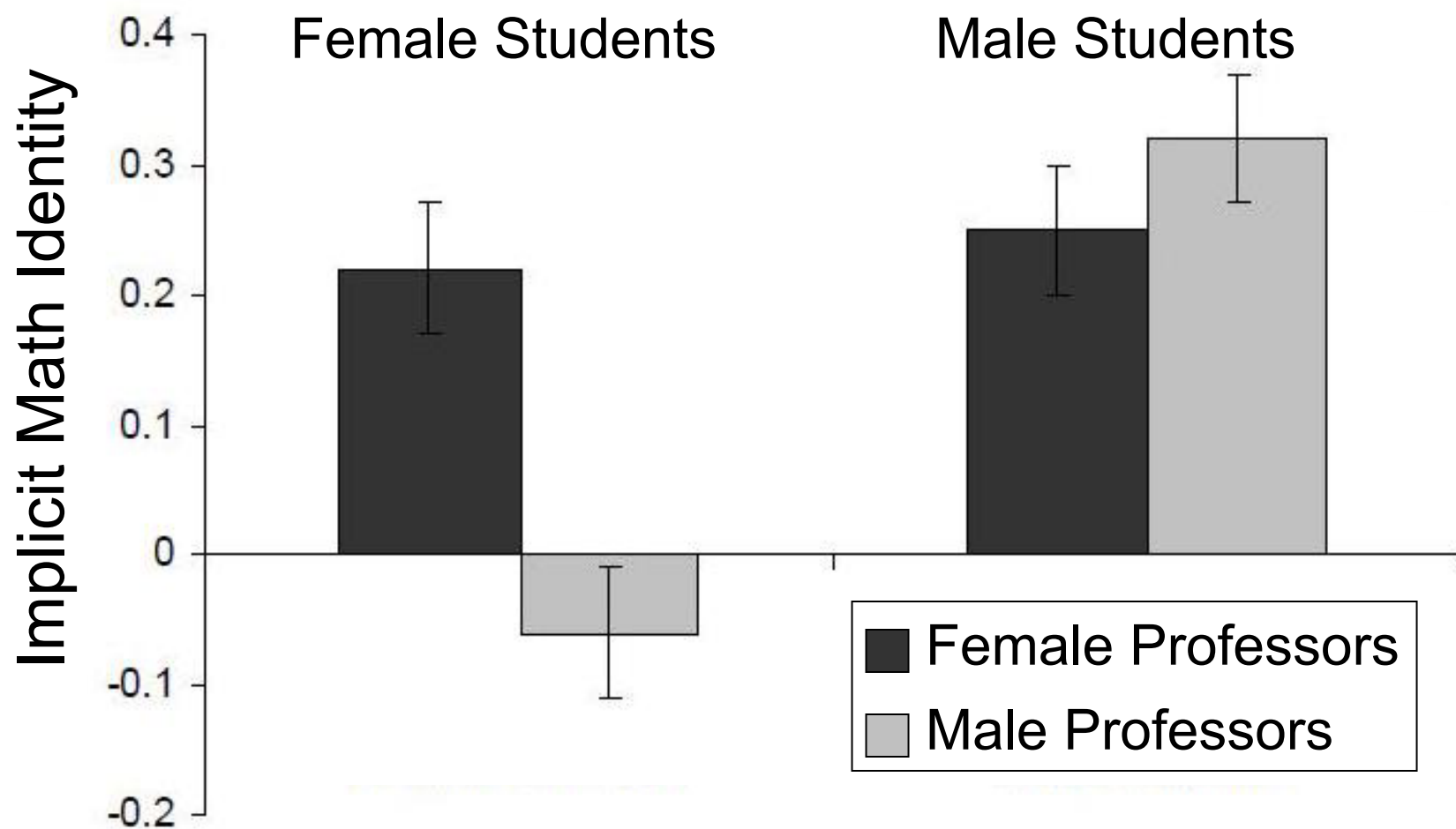
Nosek, Smyth, et al., 2009, *PNAS*

8th-grade TIMSS Gender Gap and Citizens' Implicit Bias, $r = .60^*$



Nosek, Smyth, et al., 2009, *PNAS*

Effect of Professor's Gender on Calculus Students' Implicit Math Self-Concept



Stout, Dasgupta et al., 2010

Stereotype Inoculation Model

- Even when a distinct minority,
- “inoculation” by contact with successful female role models bolsters STEM self-concept, attitude, self-efficacy and goals.

Stout, Dasgupta et al., 2010

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Costs of Implicit Bias?

Logel et al., 2009

Jenny went home to cook dinner...

1-Egalitarian to 5-Sexist

...for her husband.

...naked.

...because Tim cooked dinner last night.

...after work.

Female engineering students scored significantly worse on an engineering test after interacting with men who scored highly on this implicit sexism test.

What to do?

- More research!
- “Re-doing” more than undoing
- Articulate explicit values
- Education and self monitoring
- Promote “malleability mindset” about ability

Restructure decision-making process



Goldin & Rouse, 2000

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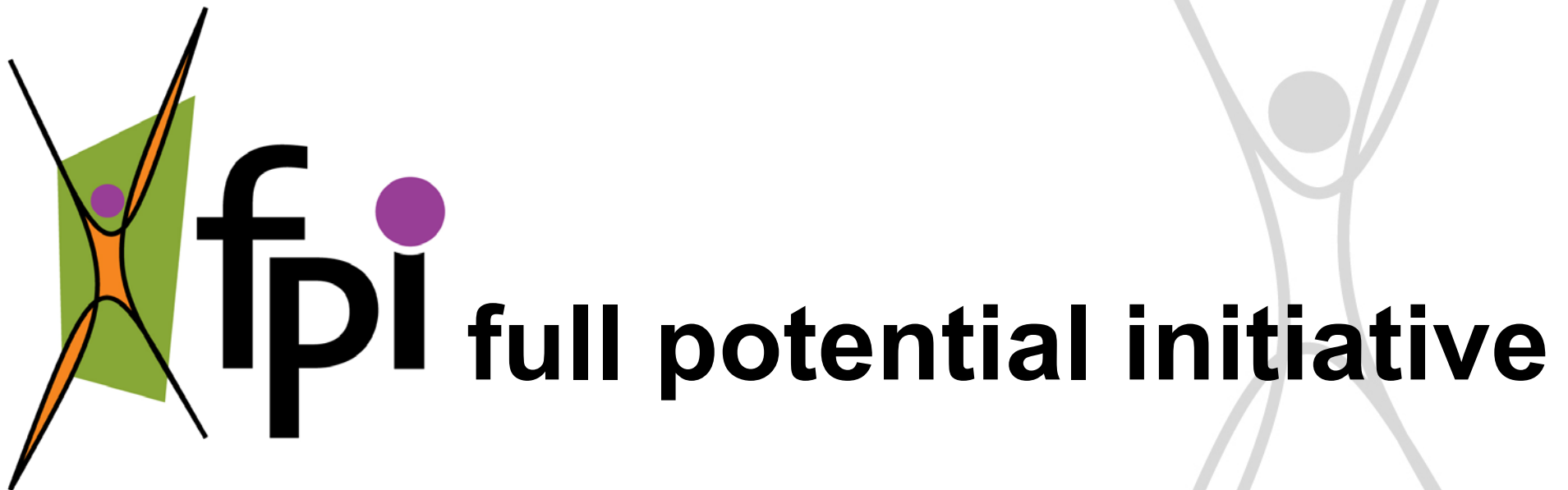
Protect against known biases



Hagemann, Strauss & Leiling, 2008

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Thank you.



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