How gender shapes our implicit biases about social status: A multi-method approach

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Annenberg School for Communication

February 19, 2020

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The Top Jobs Where Women Are Outnumbered by Men Named John

By CLAIRE CAIN MILLER, KEVIN QUEALY and MARGOT SANGER-KATZ APRIL 24, 2018

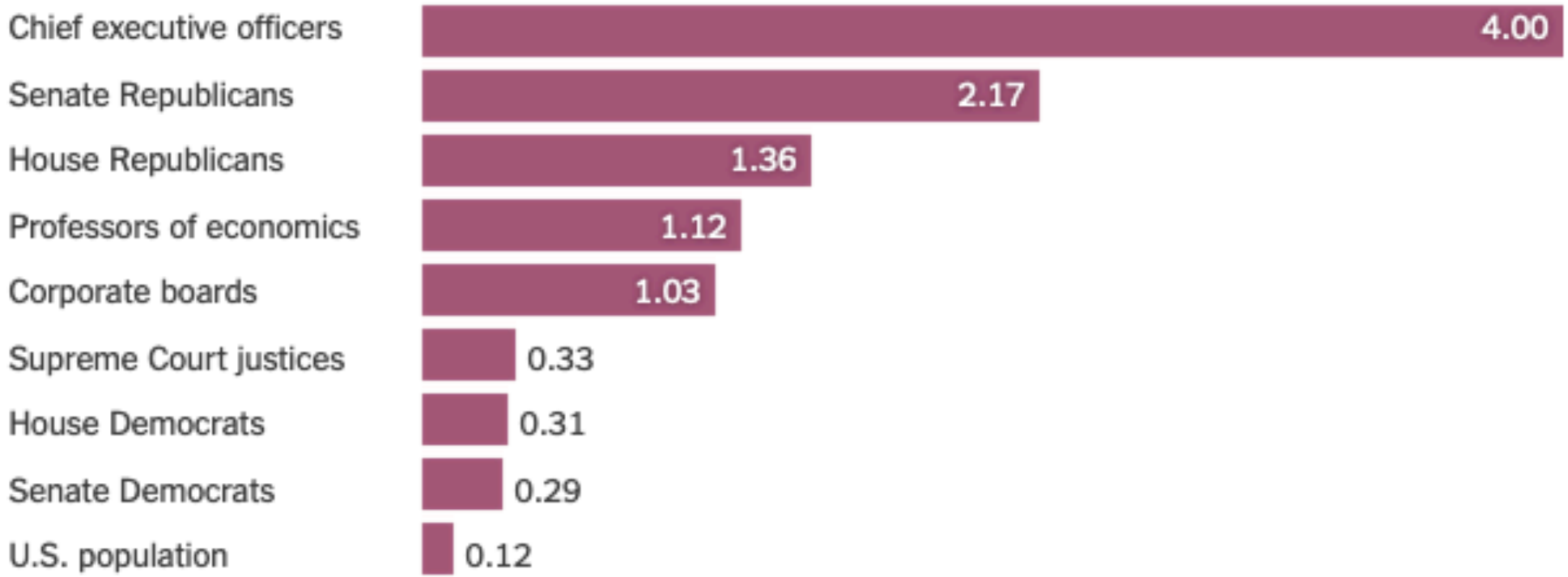
Fortune 500 chief executives named John

New York Times, 2018

How Thick Is the Glass Ceiling?

We created the Glass Ceiling Index as a measure of the under-representation of women in decision-making roles.

Ratio of the number of men named James, Robert, John or William to the number of women.



Sources: Compustat, Ernst & Young, Roll Call, Center for American Women and Politics, economics department webpages,

New York Times, 2015

The bigger picture

- Blatant discrimination (Moss-Racusin et al., 2012)
- Stereotype threat (Murphy et al., 2007; Zhang et al., 2009)
- Lack of perceived fit (Cheryan et al., 2017)
- Gender roles shaping identity/values (Eagly, 2009)
- Confidence and effort (Hügelschäfer & Achtziger, 2014; Smith et al., 2013)

The question

To what extent can gender roles explain differences in implicit preferences for the wealthy in people that vary in gender and socioeconomic rank?

High Status = Good?

- Mixed evidence in work on explicit status-based evaluations (Cuddy et al., 2008; Varnum, 2013)
- Implicit status-based evaluations are consistently positive
  - Competence (Boukarras et al., 2019)
  - Wealth (Cunningham et al., 2004; Horwitz & Dovidio, 2017; Rudman et al., 2002)
  - Socioeconomic status (SES: Mattan et al., 2019)
- High-status targets tend to elicit greater activity in brain regions involved in positive social evaluations (Mattan et al., 2017, 2018).

But what about gender?

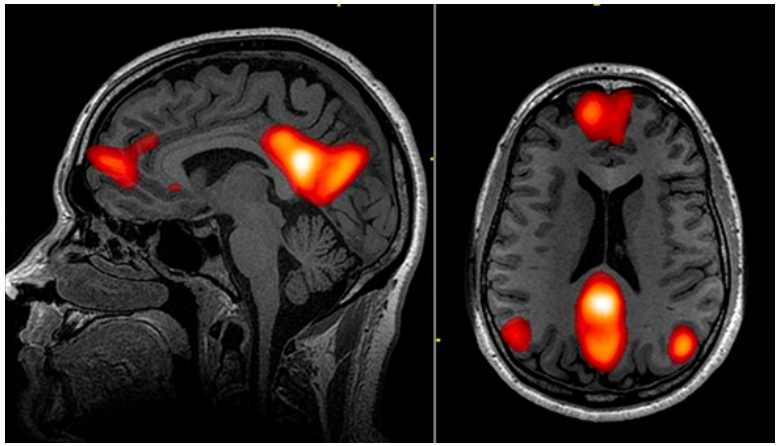
- Men compared to women more readily display and pursue status when construed in terms of social or economic influence (e.g., Dovidio et al., 1988; van Vugt & Tyber, 2015).

- Do status-based evaluations differ by gender when not relying on self-report methods?

Gender identity and precarious manhood

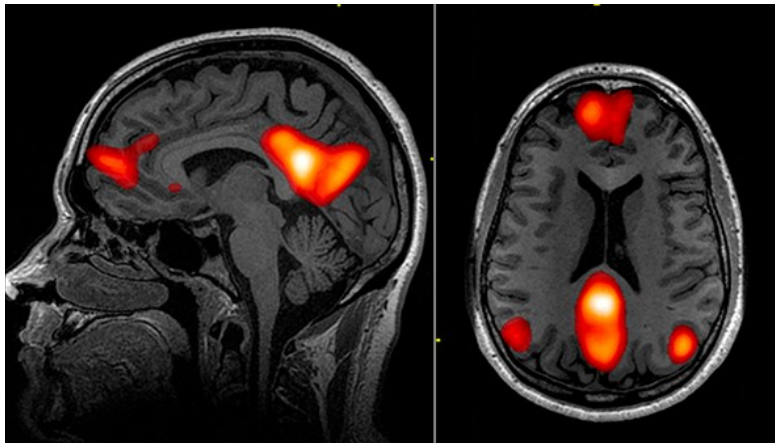
- Unlike femininity, masculinity is seen as a form of status awarded through achievement of cultural standards of manhood and lost through a failure to meet those standards (Gilmore, 1990; Vandello et al., 2008).

- Public reminders of high status (e.g., wealth, professional degrees) could therefore be of greater value to masculine (vs. feminine) identity.



fMRI: What and why?

- Measures blood oxygenation levels as an index of metabolic brain activity during a psychological task
- Benefits of fMRI (Mattan et al., 2017)
  - Understanding of neural substrates of motivated impression formation



fMRI: What and why?

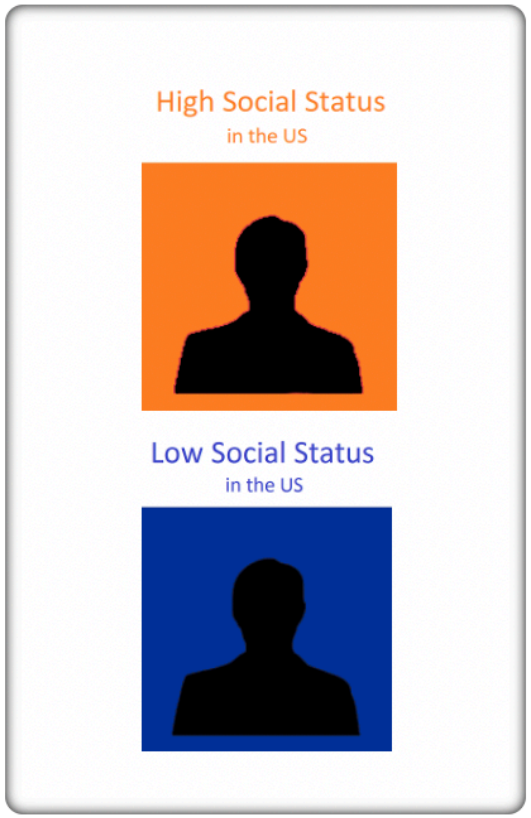
- Measures blood oxygenation levels as an index of metabolic brain activity during a psychological task

- Benefits of fMRI (Mattan et al., 2017)
  - Understanding of neural substrates of motivated impression formation
  - Helps circumvent demand effects

fMRI Impression Formation Study

- Participants
  - n=66 (n_{women}=28; n_{men}=38)
  - White non-Hispanic
  - Lived in the United States for at least 5 years
  - English-speaking
  - Between age 18 and 35
  - No history of drug abuse, psychotropic medication, or diagnosis of developmental or psychiatric disorders.

Barth*, Mattan*, et al., (under review)
*shared authorship



Status-color association training

- Participants learned to associate two colors (orange, blue) with low or high socioeconomic status (Mattan et al., 2019).
  - "Those who have the **highest social status** tend to have the most money, the most education, and the most respected jobs."
  - "Those who have the **lowest social status** tend to have the least money, the least education, and the least respected jobs or no job."

Barth*, Mattan*, et al., (under review)
*shared authorship

fMRI Impression Formation Study

- Stimuli
  - Faces from 14 men and 14 women out of the Kennedy Face Database (Kennedy et al., 2009).
  - Equated on attractiveness, likeability, and emotional expressiveness.
  - Split equally into two status groupings (low or high), also equated.

Barth*, Mattan*, et al., (under review)
*shared authorship

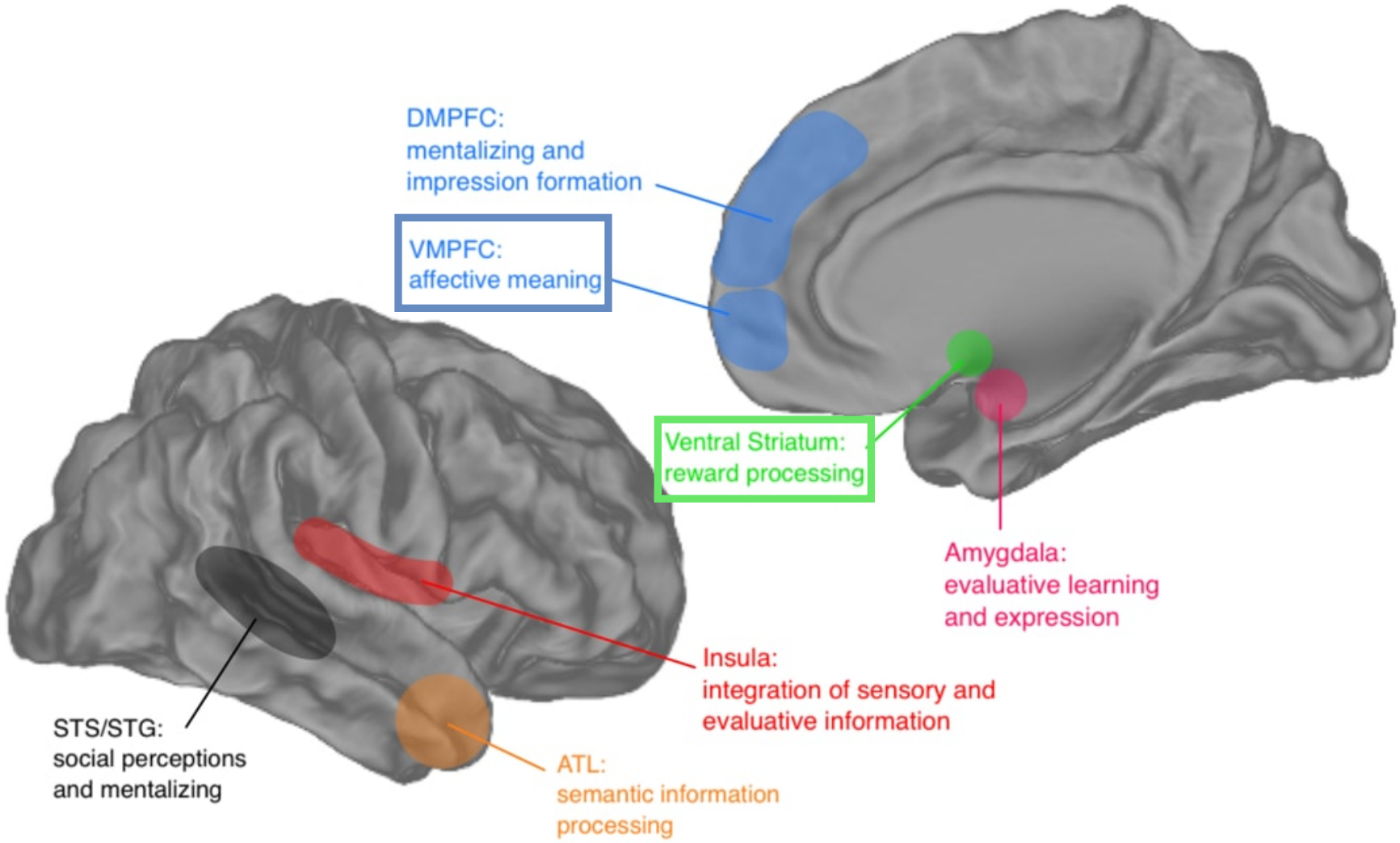
1500 ms

+

500, 2500, 4500, or 6500 ms

1500 ms

Neural substrates of status-based evaluations



Mattan et al., 2018, *Curr. Op. in Psych.*

Predictions for regions supporting positive social evaluations (NAcc, VMPFC)

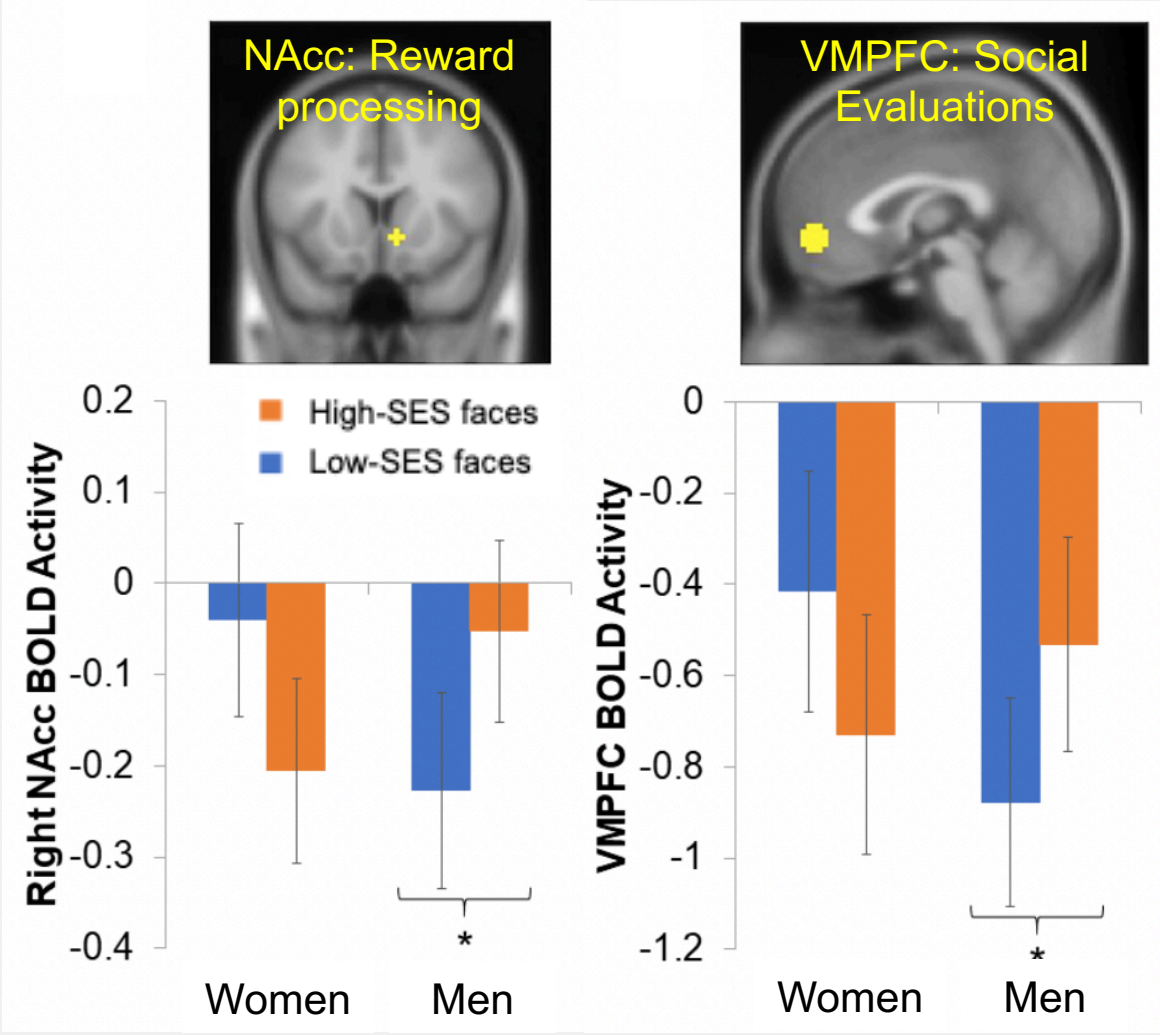
- Greater response to high status versus low status (Mattan et al., 2017, 2018).
- Larger status effect for men than for women
- Possible effects of face gender
  - Prejudice (main effect)
  - Stereotyping (Gender ✖ Status interaction)
  - Mate Selection

Barth*, Mattan*, et al., (under review)
*shared authorship

Men show greater NAcc and VMPFC responses to high SES

Perceiver Gender × Target Status Interaction: p = .005.

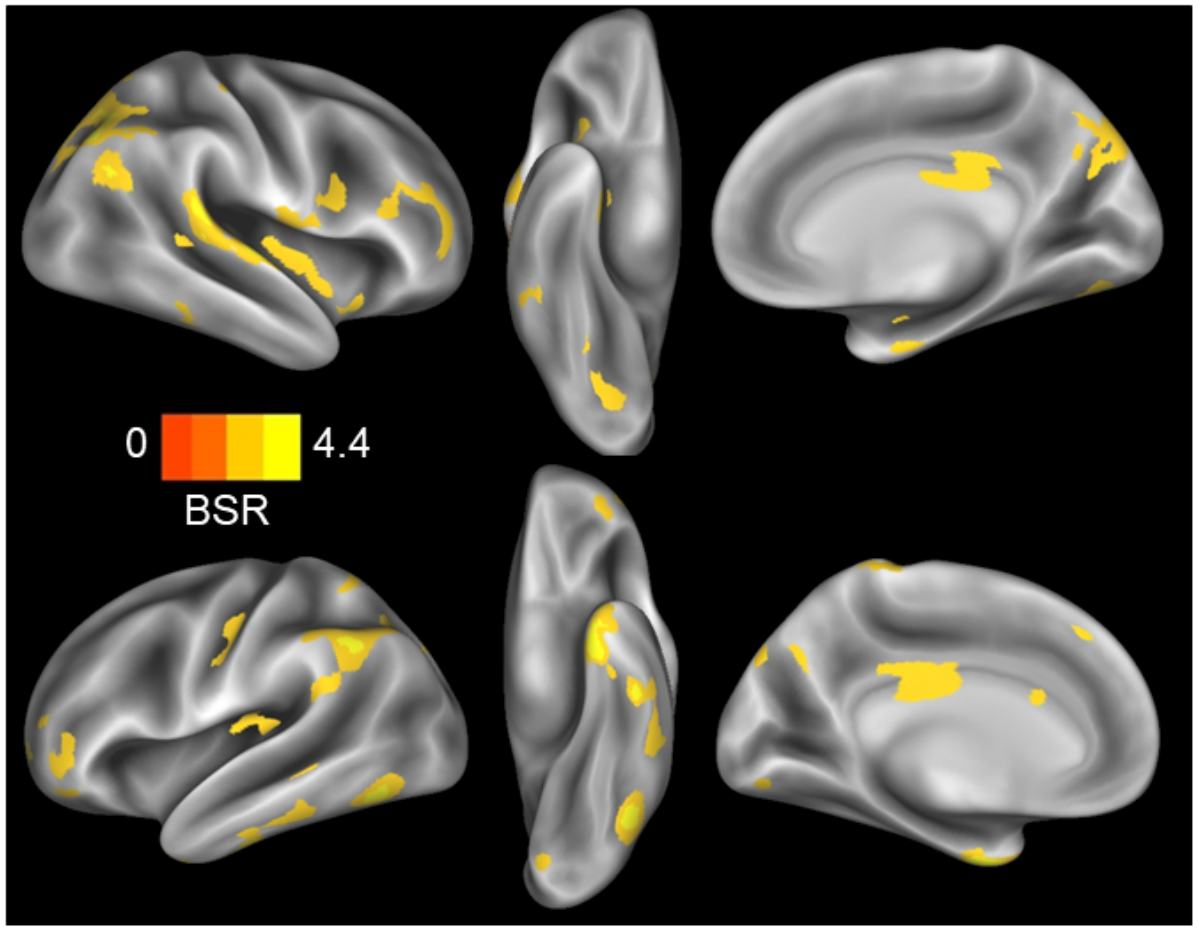
Perceiver Gender × Target Status Interaction: p = .008.

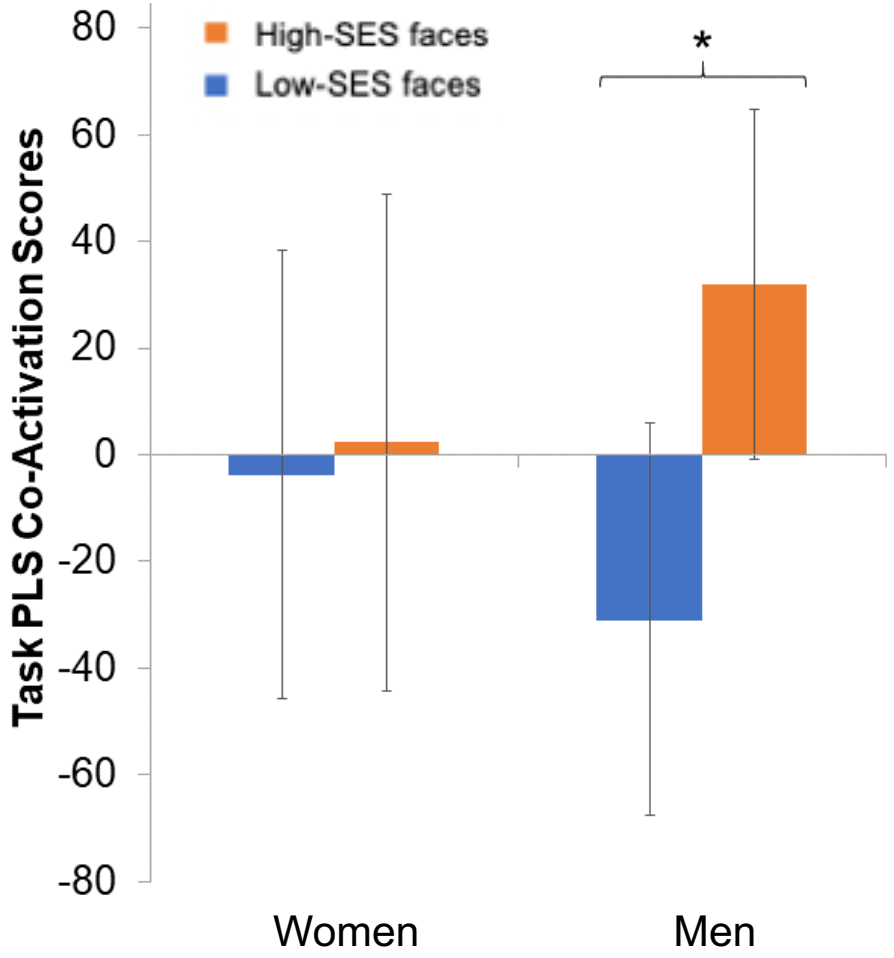


Barth*, Mattan*, et al., (under review)
*shared authorship

Functional Connectivity Analysis (PLS)

Extended salience/attention network showed greater co-activation based on increasing socioeconomic status





Barth*, Mattan*, Dang, & Cloutier, (under revi…,
*shared authorship

fMRI Study: Summary

- Men compared to women show:
  - Greater evidence of preference for high-status faces in regions that support positive social evaluations.
  - Greater coordination among multiple regions involved in salience detection and task engagement.
- No effects of face gender, sexism, or perceiver SES

Recap

- Do status-based evaluations differ by gender when not relying on self-report methods?
  - Neural level—yes!
  - Implicit associations—maybe?
- Does it also matter how much income or education one has?

Implicit bias and why it matters

- Reflects activation of valence associations that can serve as input for deliberate evaluations (Gawronski & Bodenhausen, 2011)
- May be particularly important for ambiguous contexts requiring relatively rapid responses (Horwitz & Dovidio, 2017; Moore-Berg et al., 2017)

Theoretical motivation

- Gender roles (status incongruity)
- Gender identity (masculinity)

Gender roles and status incongruity

- Women (and men) who violate gender roles frequently face negative backlash (Eagly & Karau, 2002; Moss-Racusin et al., 2010; Rudman, 1998; Rudman et al., 2012).
- Such backlash may trigger ambivalence about high status in status-incongruent individuals (Mattan et al., 2019).
- Previous work suggests that competing (i.e., ambivalent) associations can result in attenuated implicit bias (Petty, Briñol, Tormala, & Jarvis, 2006).

Gender identity and precarious manhood

- Status gain/loss is important to masculine identity (Gilmore, 1990; Vandello et al., 2008).
- Men weigh high status more heavily when forming impressions of others (Barth, Mattan, et al., under review).
- Income versus education?

Predicting implicit pro-rich bias

- H1: Income will increase implicit pro-rich bias more for men than for women
- H2: Income and education will both modulate men's (vs. women's) pro-rich bias
  - At low income (H2A): Gender ✖ Education
  - At high income (H2B): Education main effect?

Mattan & Cloutier, (forthcoming), *Royal Society Open Science*

Where and how did I find the data?

The preregistration revolution

Brian A. Nosek[a,b,1], Charles R. Ebersole[b], Alexander C. DeHaven[a], and David T. Mellor[a]

[a]Center for Open Science, Charlottesville, VA 22903; and [b]Department of Psychology, University of Virginia, Charlottesville, VA 22904

Edited by Richard M. Shiffrin, Indiana University, Bloomington, IN, and approved August 28, 2017 (received for review June 15, 2017)

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The Attitudes, Identities, and Individual Differences (AIID) Study and Dataset

Contributors: Ian Hussey, Sean Hughes, Calvin K. Lai, Charles R. Ebersole, Jordan Axt, Brian A. Nosek

Affiliated institutions: University of Virginia, Universiteit Gent

Date created: 2012-05-31 01:58 PM | Last Updated: 2019-07-17 07:02 AM

Identifier: DOI 10.17605/OSF.IO/PCJWF

Category: Project

Description: A large dataset for investigating relations among implicit and explicit attitudes and identities, motivations, beliefs, knowledge, and popular individual difference measures.

AIID sample characteristics

- Data collected online between 2004 and 2007
- Sample size: n = 175 (n_{women}=115; n_{men}=60)
- 71.4% White, 26.3% racial/ethnic minority
- Between age 14 and 66

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AIID measures

- Outcome measure: IAT D score—preference for rich over poor
- Predictors:
  - Sex: only options were male and female
  - Income: 5-point scale
  - Education: 5-point scale
- Model:
  - IAT ~ sex*income*education

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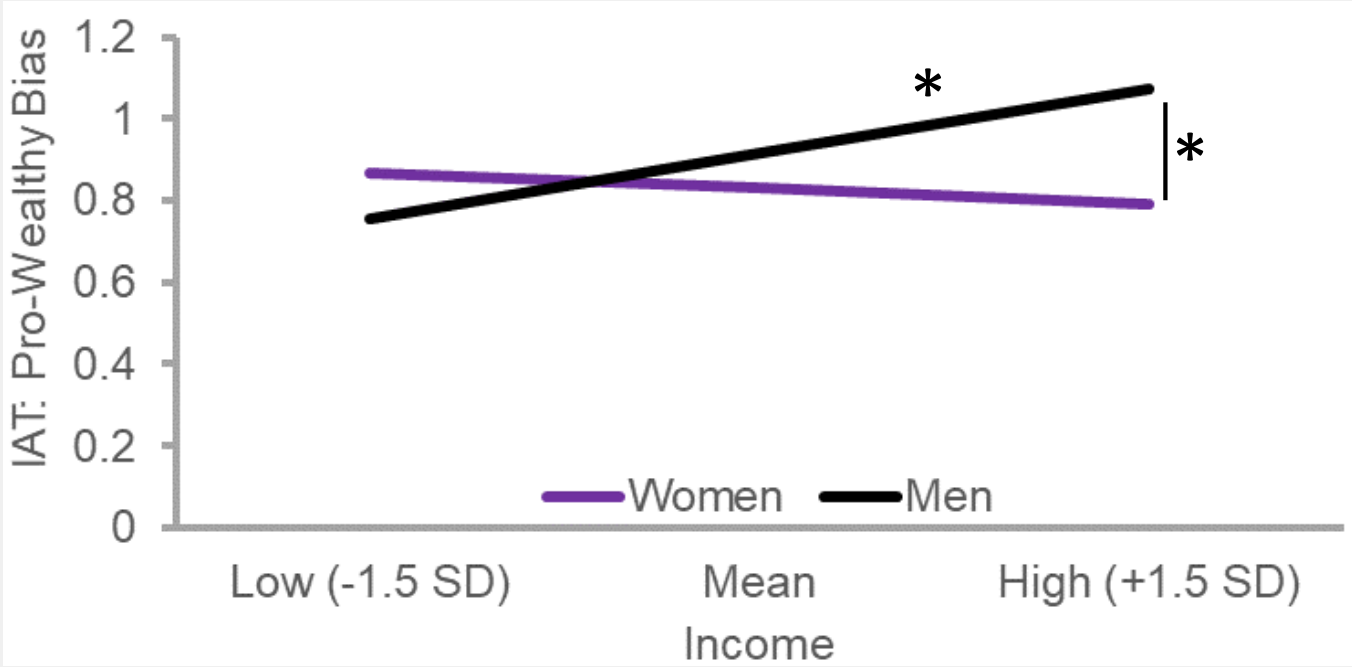
H1: Men show greater pro-rich bias with increasing income



Gender × Income interaction:
b = 0.132, SE = 0.055, $CI_{95\%}$ = [0.024, 0.240], $t(167)$ = 2.413, p = .017

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H2: Income and education modulate gendered preference for the rich

Gender × Income × Education interaction:

b = -0.089, SE = 0.059, $CI_{95\%}$ = [-0.205, 0.027], $t(167)$ = -1.521, p = .130

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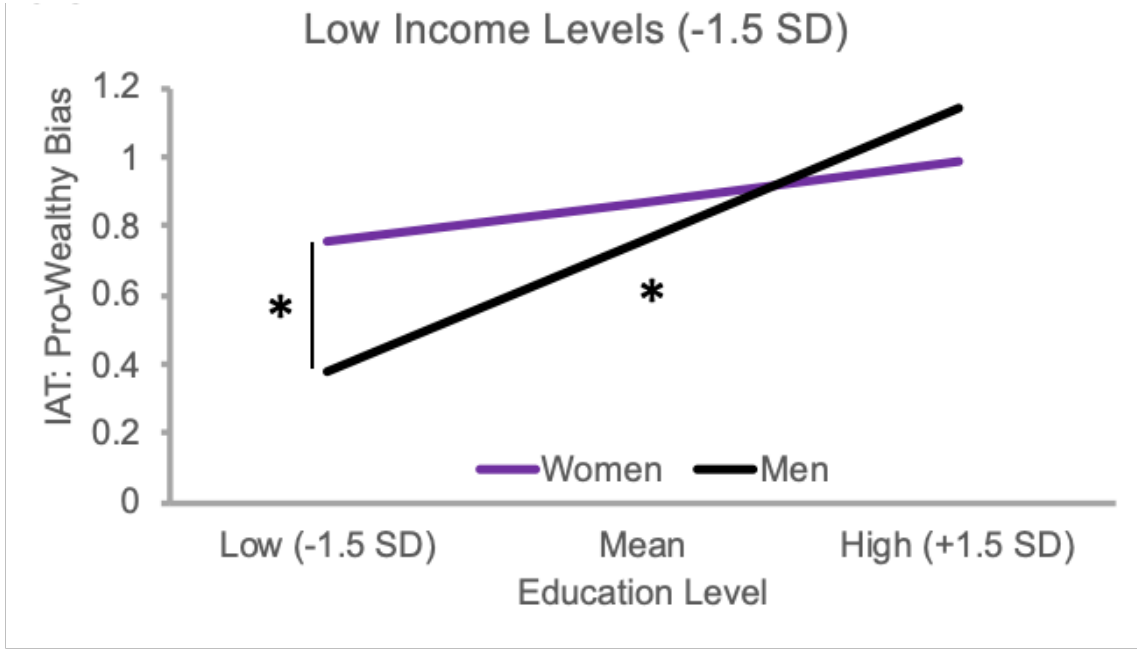
H2: Income and education modulate gendered preference for the rich

Gender × Income × Education interaction:

b = -0.089, SE = 0.059, $CI_{95\%}$ = [-0.205, 0.027], $t(167)$ = -1.521, p = .130

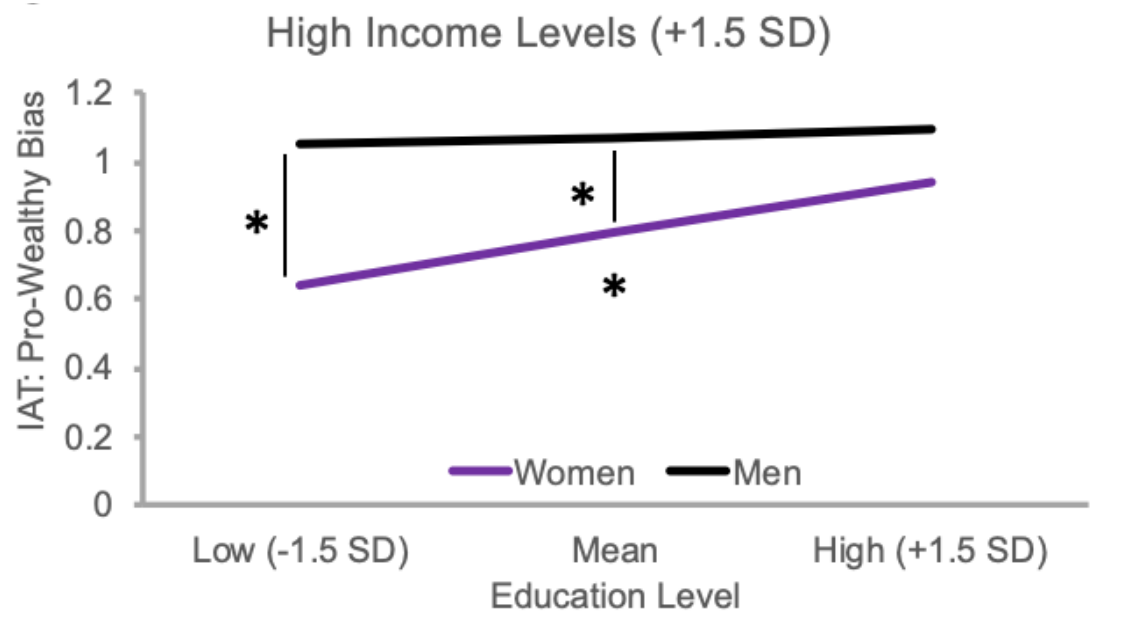
Gender × Education interaction:

b = 0.180, SE = 0.113, $CI_{95\%}$ = [-0.043, 0.403], $t(167)$ = 1.591, p = .113.



Gender × Education interaction:

b = -0.089, SE = 0.097, $CI_{95\%}$ = [-0.279, 0.102], $t(167)$ = -0.917, p = .360.



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IAT Study: Summary

- Men compared to women show greater implicit bias in favor of the rich over the poor as a function of:
  - increasing income, and
  - increasing education levels (low income only)
- No effects of income for women

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Discussion and Final Takeaways

- Across multiple methods, men evaluate high status more positively than women
- Results partly consistent with gender roles and masculine identity

Discussion and Final Takeaways

- Across multiple methods, men evaluate high status more positively than women
- Results partly consistent with gender roles and masculine identity
- Findings challenge generalizations from the mate selection literature

Thank You!

Impression Formation Social Neuroscience Lab (University of Delaware):

Jasmin Cloutier

Denise Barth

Tzipporah Dang

Communication Neuroscience Lab (University of Pennsylvania):

Emily Falk

Disparities and Diversity Science Group

Brian Nosek and colleagues at Project Implicit and OSF

Michael Kraus and Anonymous Reviewers

Registered report pilot sample: Distribution by gender and SES

Table 1. Distribution of participants from the pilot dataset (n = 175) by gender, income level, and education level.

Gender	Income Level (USD)	No High School Diploma	High School Graduate	Associate's Degree or Some College	Bachelor's Degree	Graduate Degree or Education
Women	< $25,000	0	0	12	6	1
	$25,000 - $49,999	0	5	8	17	3
	$50,000 - $74,999	0	1	7	10	8
	$75,000 - $149,999	0	2	7	8	7
	> $150,000	1	1	2	4	5
Men	< $25,000	0	0	8	7	1
	$25,000 - $49,999	1	0	2	6	0
	$50,000 - $74,999	0	2	3	4	4
	$75,000 - $149,999	0	0	4	9	5
	> $150,000	0	0	1	0	3

Note. Numbers within each cell indicate the sum total of pilot participants in that condition.

Registered report: Participant-level exclusions n_{pilot} = 46

(1) Greater than or equal to 35% of responses under 300 ms in any one practice block.

(2) Greater than or equal to 25% of responses under 300 ms in any one critical block.

(3) Greater than or equal to 10% of responses under 300 ms in critical blocks.

(4) Greater than or equal to a 50% error rate in any one practice block.

(5) Greater than or equal to a 40% error rate in practice blocks.

(6) Greater than or equal to a 40% error rate in any one critical block.

(7) Greater than or equal to a 30% error rate in critical blocks.

(8) In addition to implementing criteria 1–7 that were used by Nosek and colleagues (2007), we also adopted a stricter exclusion criterion, removing any participant with greater than or equal to 10% responses over 10,000 ms in IAT critical blocks. This additional criterion was implemented to exclude participants who were potentially insufficiently attentive during, or confused by, the IAT.