Gender Bias in the Engineering Workplace

Joan C. Williams[1], Su Li[1], Roberta Rincon[2], & Peter Finn[2]

[1] Center for WorkLife Law, University of California, Hastings, College of the Law, USA
[2] Society of Women Engineers, USA

Objective

The primary research objective was to test for four basic patterns of implicit gender bias in the engineering workplace that have been found to affect decisions in hiring, promotions, and compensation:

- Prove-It-Again: You repeatedly have to prove yourself, or your ideas are ignored or stolen
- Tightrope: Pressure to behave in feminine ways and backlash when women behave in masculine ways
- Maternal Wall: Mothers/parents are not good workers
- Tug of War: strategic distancing and fighting for women slots

Researchers also analysed the impact of implicit bias on workplace processes, including hiring, pay, promotions, performance evaluations, and mentoring.

Methodology

- Quantitative data analysis
  - 39 Likert scale questions (6-point scale)
  - Bivariate analysis to compare percent agreement by gender and race, and mean differences
  - Factor analysis used for Prove-It-Again and Tightrope biases
  - Multivariate analysis: Regression analysis using gender, race, age, and work seniority as independent variables
  - Responses were weighted to account for lower representation of men and minorities
- Qualitative data analysis
  - In-depth interviews
  - 30% of respondents provided extensive comments on survey

Sample Demographics*

N = 3,093 total survey respondents

- At least two years of engineering work experience
- Survey distributed to engineers in the United States and Canada

	Male	Female	Total
White	292	1,744	2,036
African American	7	95	102
Latino/Latina	15	125	140
Asian American	13	170	183
Other	10	16	26
Total	337	2,150	2,487

* From respondents who provided this information.

Results

	White Men	White Women	Women of Color
I feel that I am held to a higher standard than my colleagues	40%	51%	61%
I have to repeatedly prove myself to get the same level of respect and recognition as my colleagues	35%	59%	71%
I have the same access to desirable assignments as my colleagues	85%	68%	53%
Having children did not change my colleagues' perceptions of my work commitment or competence	78%	55%	54%^
As compared to my colleagues, I work more but get paid less	29%	37%	49%
I feel I get less honest feedback on my performance than my colleagues	20%	28%	34%
I have been given the advancement opportunities and promotions I deserve	71%	65%	51%
I have had as much access to informal or formal networking opportunities as my colleagues	84%	69%	63%

^ Not statistically significant.

Conclusions

The findings confirm laboratory experiment results on implicit bias and provide evidence that women engineers feel that they are disadvantaged in hiring, pay, promotions, performance evaluations, and mentoring. As efforts are made to increase diversity in STEM, organizations should consider solutions to address implicit biases through institutional changes – fixing the system, not just fixing the people.

References

Williams, J. C., Li, S., Rincon, R., & Finn, P.. *Climate Control: Gender And Racial Bias In Engineering?* Society of Women Engineers, 2016. http://research.swe.org/

Contact

Roberta Rincon, Manager of Research, Society of Women Engineers, roberta.rincon@sweoffice.org