Gender Imbalance Online[1]

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Abstract

We report results of a natural field experiment conducted XXXX.

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1 Introduction

Though the proportion of Internet users is nearly the same across the genders, researchers have found significant gender imbalances in online behavior:

- Only 13 percent of Wikipedia contributors are women (Hill and Shaw, 2013);
- Wikipedia articles on women are more likely to be missing than are articles on men relative to Britannica (Reagle and Rhue, 2011);
- Less than 5 percent of StackOverflow users answering technical questions are women (Vasilescu et al., 2012);
- Women make a small fraction of people going to hackathons or taking part in online competitions on crowdsourcing platforms (Innocentive, TopCoder, Kaggle).

The reasons behind this gender gap are not fully understood. It is clear that it is not due to discriminatory rules put in place on these platforms. Rather the culprit seems to be a mix of psychological motivations and institutional characteristics of the platforms that might have inadvertently promoted an imbalance.

We conjecture that an important mechanism of imbalance could be the combination of

1. Gamification & incentives
2. Differences in preferences between the genders

Online platforms use elements of game play to engage their members (rankings, game points, competition with others, etc.) and stimulate higher levels of user activity. If men and women have different inclinations towards these incentives, they might inadvertently stimulate an imbalanced participation.

2 Literature

2.1 Gender composition

Charness and Rustichini (2011) finds that males cooperate less often when observed by groups of peers of the same gender, while females cooperate more often. (Possible interpretation: males and females want to signal different "skills" to their peers).

De Paola and Scoppa (2015) shows evidence of gender discrimination in committees for haring academics in Italy. Mixed-gender committees are less likely xxx.

2.2 Role models

According to the Oxford dictionary, a "role model" is a person "whose behaviour, attitudes, and/or values are seen by individuals as worthy of imitation or emulation." In economics, role models are a special case of "externality." It is also related with the notion of "peer effects," as effects xxx. Although by looking at what defines a peer, a role model may not fall in this definition.

Theory. See Durlauf, Bisin, Verdie, Young, etc. Transmission of values.

2.2.1 Education

Carrell et al. (2010) Air Force Academy study

Lyle (2007) examines a natural experiment at West Point and finds a positive effect of senior cadets' specialization on junior's future decisions about specialization.

For Gilbert (1985), female students give relatively more importance to their role-model relationships to their professional development than male students. [Why so?]

Dee (2004) examines the role of teachers [results TBA]

2.2.2 Computer science

Cheryan et al. (2013) finds that seemingly small interventions, such as changing decorations in CS room at school/university, can have an impact on women's careers in CS.

2.2.3 Women

Marx and Roman (2002) finds that female experimenters administering a math test can have a positive impact on women's performance in the test. Likewise, Latu et al. (2013) finds that even a subtle exposure to pictures of highly successful female role models (such as Hillary Clinton or Angela Merkel) can have a positive impact on women's behavior.

Glynn and Sen (2015) finds that having daughters affects judges decisions.

Marx and Ko (2012) argues that role model effectiveness can be enhanced via increasing similarity among in-group role models. [Notes: in psychology, similarity is i) shared identity e.g., gender, race ii) shared attributes, e.g., backgrounds, interests]

(Marx and Ko, 2012, p. 809) have three questions with 1 to 7 scales 1. "How similar do you perceive the candidate to be to you?" 2. "How competent do you think the candidate is in math?" 3. "The candidate is inspirational for me."

2.2.4 Evaluations

Bohnet et al. (2015)

3 Experimental design

3.1 Profiles selection

1. Recruitment profiles...
2. Consent profiles...
3. Profile survey...

Evaluation at CLER

1. Recruitment...
2. Consent for CLER...

3.2 Preliminary/final survey

1. Recruit survey...
2. Survey questions...

3.3 Treatment

1. solicitation...
2. debriefing...

AER Registration

3.4 Power simulations

3.5 Context

We designed two interventions in collaboration with HeroX.com, a crowdsourcing platform. We view HeroX as an example of a competitive (platform users make submissions solving a given problem and the top submissions are awarded a cash prize) and collaborative environment, respectively.

3.6 Data

3.7 Creating role-model profiles

The challenge is to make realisitic role models and xxx. We recruit 19 members who have won a previous challenge: 9 men and 10 women.

We begin with bio descriptions provided by each of these members. We restrict to people with a high quality profile description that xxxx represantitive and a profile picture that can be used to xxxx (on this basis we exclude 9 profiles).

We create high quality and low quality pool of bios. The choice of names is crucial to the experiment. Bertrand and Mullainathan: - tabulate historical names by race - they used survey to validate their choices

- High-low quality and Names

References

I. Bohnet, A. Van Geen, and M. Bazerman. When performance trumps gender bias: Joint vs. separate evaluation. *Management Science*, 62(5):1225–1234, 2015.

S. E. Carrell, M. E. Page, and J. E. West. Sex and science: How professor gender perpetuates the gender gap. *The Quarterly Journal of Economics*, 125(3):1101–1144, 2010.

G. Charness and A. Rustichini. Gender differences in cooperation with group membership. *Games and Economic Behavior*, 72(1):77–85, 2011.

S. Cheryan, B. J. Drury, and M. Vichayapai. Enduring influence of stereotypical computer science role models on women's academic aspirations. *Psychology of Women Quarterly*, 37(1):72–79, 2013.

M. De Paola and V. Scoppa. Gender discrimination and evaluators' gender: evidence from italian academia. *Economica*, 82(325):162–188, 2015.

T. S. Dee. Teachers, race, and student achievement in a randomized experiment. *Review of Economics and Statistics*, 86(1):195–210, 2004.

L. A. Gilbert. Dimensions of same-gender student-faculty role-model relationships. *Sex Roles*, 12 (1):111–123, 1985.

A. N. Glynn and M. Sen. Identifying judicial empathy: Does having daughters cause judges to rule for women's issues? *American Journal of Political Science*, 59(1):37–54, 2015.

B. M. Hill and A. Shaw. The wikipedia gender gap revisited: characterizing survey response bias with propensity score estimation. *PloS one*, 8(6):e65782, 2013.

I. M. Latu, M. S. Mast, J. Lammers, and D. Bombari. Successful female leaders empower women's behavior in leadership tasks. *Journal of Experimental Social Psychology*, 49(3):444–448, 2013.

D. S. Lyle. Estimating and interpreting peer and role model effects from randomly assigned social groups at west point. *The Review of Economics and Statistics*, 89(2):289–299, 2007.

D. M. Marx and S. J. Ko. Superstars "like" me: The effect of role model similarity on performance under threat. *European Journal of Social Psychology*, 42(7):807–812, 2012.

D. M. Marx and J. S. Roman. Female role models: Protecting women's math test performance. *Personality and Social Psychology Bulletin*, 28(9):1183–1193, 2002.

J. Reagle and L. Rhue. Gender bias in wikipedia and britannica. *International Journal of Communication*, 5:21, 2011.

B. Vasilescu, A. Capiluppi, and A. Serebrenik. Gender, representation and online participation: A quantitative study of stackoverflow. In *Social Informatics (SocialInformatics), 2012 International Conference on*, pages 332–338. IEEE, 2012.