

What's in a name?

A personnel selection experiment on gender bias in applicant assessment

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Inequality by Design? The Impact of Organizational Practices on Individual Employment Outcomes

Abstract

Organizational practices have been suggested to have an impact on employees' unequal career outcomes. Women's career outcomes may be at a particular risk in highly male-dominated fields due to stereotypes and perceived "fit". Decision-maker bias in the assessment of applicant's suitability is studied at a university of technology in a personnel selection experiment. Treatments compare results under visibility of gender with a gender-blind control condition, and add (varied) information on homophilous ties within the team and on equal opportunity law. Results show women's odds to be ranked for an interview decrease through visibility of gender alone. Women and men face gender-stereotypical ascriptions of personal and technical qualities once gender is revealed, putting women at a potential disadvantage for an advertised stereotypically masculine position. Homophily further lessens women's chances; mere reference to the law cannot alter biased outcomes. Findings suggest gender stereotypes and implicit bias in highly male-dominated fields need to be addressed to work against unequal selection outcomes for women.

Introduction

Women remain underrepresented in top positions in management (Oakley 2000), in the public and academic sector alike (Kolpin&Singell 1996, Gilbert 2007). It has been suggested organizations themselves play a key role in perpetuating inequality for their employees' career outcomes (Reskin 1993, Fernandez&Mors 2008). Castilla&Benard (2010) have demonstrated meritocratic organizational culture can paradoxically put female employees at a disadvantage. It has also been suggested

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demographic similarity to current members and decision-makers means privilege for career advancement (Krefting 2003). Therefore majority-minority proportions, perceived team fit and homophily are organizational givens that should be further examined: In-group members are suggested to receive more favorable suitability evaluations than out-group members (Van der Walt&Ingley 2003). Gendered selection preferences may stem from a need to establish “fit” with current members (Fawcett&Pringle 2000). Theory suggests fit-derived performance expectations may cause favorably flawed evaluation processes (Heilman 1997), which could then lead to flawed selection processes in employment (Granleese 2004).

In close connection with these considerations, gendered stereotypes/implicit associations regarding the suitability of professions and positions for either gender merit attention. Stereotypical ascriptions attached to gender as a most salient feature (King et al. 2011) can influence assessments of individual performance, capability and qualification. Traits necessary for effective leadership are overwhelmingly ascribed to the male stereotype (Schein 2001). On the functional level, not only management, also academia is sex-typed masculine (Gilbert 2007). It has been empirically confirmed women risk to have their evaluation as effective managers or leaders discounted when assessors perceive incongruity between their gender and professional role requirements (Eagly&Karau 2002).

In this study, we analyze potential gender bias in personnel selection outcomes in a laboratory experiment. In the following sections we briefly describe theoretical background and hypotheses, experimental design and results. Finally, we discuss implications of findings.

Theoretical Background and Hypotheses

The assessment of employees is a key organizational practice for its direct impact on career outcomes. Through assessment of past performance/future potential *and* the translation of such assessment into decisive allocation of rewards and posts, employees’ careers are determined. For highly demographically homogeneous environments, majority status in salient attributes or features has been suggested to exert disproportionate influence in decision-making processes (Van der Walt&Ingley 2003). In a highly male-dominated field, it is therefore expected applicant gender will exercise an impact on the assessment of candidate suitability (**H1**). Aside decision-maker bias, institutionalized bias in the form of stereotypical associations of who “fits”

the existing team are expected to further influence selection decisions (H2). Corporate compliance with anti-discrimination laws should ensure effective practices to counter individual/institutionalized bias in applicant selection. It has been added to the discussion existing laws may fail to effectively tackle covert, subtle discrimination (King et al 2011). The ability of the law to counteract such implicit or subtle biases is hence expected to be low (H3).

These hypotheses are tested empirically at Vienna University of Technology. VUT lends itself to a study on gendered assessment of applicants' suitability firstly for its pronouncedly low proportion of women overall present in the organization on the student and scientist level. The proportion is decreasing further up the academic hierarchy, suggesting a leaking pipeline phenomenon. Organizational selection practices therefore promise to be interesting from a general majority-minority viewpoint as well as from an organizational and professional context perspective.

Method

For this study of personnel selection practices, a single-blind experiment with current and future organizational decision-makers was conducted. The controlled laboratory experiment allows for the systematic variation of environmental aspects while keeping others constant (Charness 2010), thereby opening opportunities to develop and test different theories in the organizational context (Flynn&Staw 2004). Past research has already utilized (multi-treatment) experiments to understand decision-maker biases (Burmeister&Schade 2007). Croson&Gächter (2010) suggest experiments be used for the study of corporate governance to gain better understanding of organizational dynamics and contexts which provide decision-makers with incentives to make decisions contrary to organizational interest. In the continuation of this thought, the impacts of gender, homophily and reference to the law on decision-maker bias in applicant assessment was explored in four experimental treatments participants were randomly allocated to:

296 members of 3 faculties² with differing gender proportions (Technical Chemistry, Mechanical and Civil Engineering) were presented with six realistic job applications in their field, which they worked on in writing. Based on a model experiment (Petersen&Krings 2009), participants assumed the fictitious identity of specialist

² In total: Full professors (38), senior scientists (52), advanced students (206).

senior scientist at a prestigious private technology research institute.³ The concrete task had participants support HR with their specialist knowledge by (a) *ranking* three out of six applicants according to their qualification/suitability for a job interview, and (b) *justifying* their ranking. Half of the candidates were of excellent, half of good qualification, so the selection of exactly three candidates to be ranked for a job interview in the absence of bias should be unambiguous. Qualification levels were designed in cooperation with specialized senior scientists to ensure sound experimental design and internal validity (Webster&Sell 2007, p 75ff).

The first treatment, *Basic Neutral* scenario, presented six complete curriculum vitae stripped of all information regarding applicants' sex. These candidates were manipulated on two levels: Their qualification level (excellent/good) and stereotypical masculinity/femininity. Stereotypical design manifested itself, inter alia, in covering letter wording and interests (Steffens&Mehl 2003):

<i>Curriculum Vitae</i>	<i>Stereotypical manipulation</i>	<i>Qualification level</i>	<i>Alma Mater</i>	<i>Label (Visible)</i>
1	Feminine	Excellent	Vienna	AMY
2	Masculine	Excellent	<i>Randomized</i> Munich/Vienna	EVA
3	Masculine	Excellent	<i>Randomized</i> Munich/Vienna	LEO
4	Masculine	Good	<i>Randomized</i> Graz/Vienna	BEN
5	Masculine	Good	<i>Randomized</i> Graz/Vienna	ZOE
6	Feminine	Good	Graz	JAN

Table 1: CV design and manipulation across all treatments (*Neutral* and *Visible*) unless otherwise indicated (*Visible*)

³ The abstraction from the university as a form of “disembedding” from the familiar context (Güth&Kliemt 2010) wants to mitigate social desirability bias in responses, the major challenge for experiments on socially frowned upon phenomena (Powell 1987).

On each of the two qualification levels, a “perfect pair” of equivalent candidates, designed stereotypically masculine (*Eva/Leo; Ben/Zoe*), competes directly. For both pairs, their alma mater was randomized “Vienna”/“other”⁴ over the entire sample. To render the task more complex and further reduce the threat of social desirability bias in answers, the remaining two candidates on excellent and good levels were designed stereotypically feminine and entirely internal (*Amy*) and external (*Jan*), respectively.

The second treatment or *Basic Visible* scenario added names,⁵ randomized photos and gendered information such as military service to otherwise identical curriculum vitae.

The third treatment brought in a homophily component in the form of a subtle *Incentive* to favor male applicants: In the experimental guidelines, the institute’s HR officer suggested to give thought to team fit and (stereotypically masculine) qualities like assertiveness in order to uphold excellent cooperation with project-funding industrial partners.

The fourth treatment added a conflicting piece of information regarding the *Law*, all other things remaining equal: Institute leadership reminded decision-makers equal opportunity law had to be respected in all personnel decisions.

Since only three out of six applicants were ranked, the generated quantitative data were evaluated using preference models for partial rankings (Hatzinger/Dittrich/Salzberger 2009). This model class extends the basic Bradley-Terry model for paired comparisons to other response formats, such as ratings or rankings and allows for missing values to also incorporate partial rankings. The fitting is accomplished by log-linear modeling of partial ranking patterns that might vary between subjects groups. The method is embedded in the generalized linear models family and thus model evaluation and significance tests can be performed in a general theoretical framework.

For written justification of ranking decisions, emerging thoughts were abstracted into categories of applicant competences with content analysis. Two independent coders worked on unitization, categorization and coding of the material to ensure inter-coder reliability (Srnlka and Köszegi 2007).⁶

⁴ Both Munich and Graz universities of technology are reputed institutions in the German-speaking region.

⁵ Common Austrian names were used – they have been altered to Anglo-Saxon pseudonyms for this paper.

⁶ Progress is at 74% of the professor sample (2 faculties) – full analysis of this sub-sample is expected for the end of January.

Results

Applicants' odds of being ranked in the *Neutral* (gender-blind) scenario confirm the cohesiveness of the experimental design: All three “excellent” candidates *Amy*, *Eva* and *Leo* have higher odds, and that in comfortable distance to the “good” candidates *Ben*, *Zoe* and *Jan*. Within the “excellent” cluster, *Amy*, the candidate whose alma mater remained “Vienna” across the entire experiment, receives the highest odds of ranking. For the purely external candidate, the opposite effect is observable: *Jan* is ranked last in his “good” cluster. Once candidate gender is added, *Amy* remains at the top of the lot. Amongst the competing pair *Eva/Leo*, now distinguishable by their gender, *Eva* loses ground in her odds to be called for an interview to *Leo*. *Zoe* experiences a similar disadvantage: She loses ranking odds compared to equally qualified *Jan*, which confirms H1: Gender alone has an impact on the odds to be ranked for an interview.

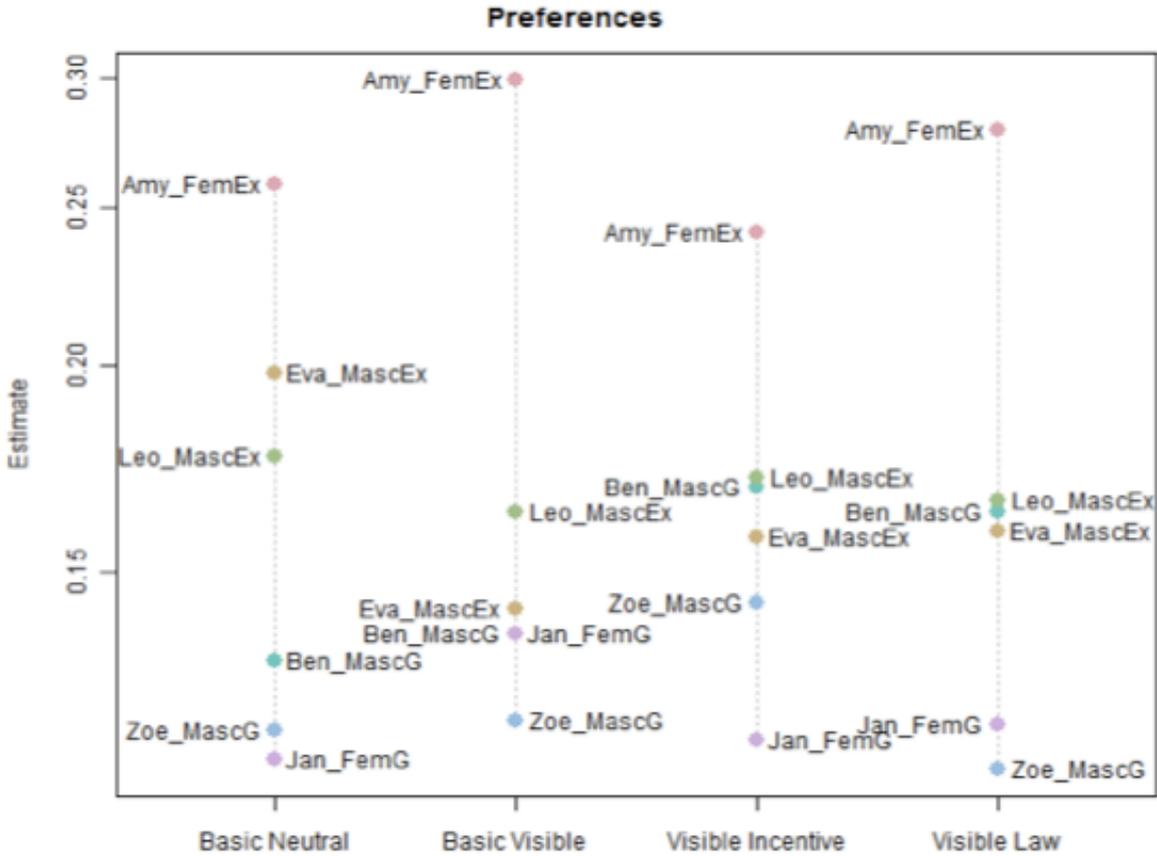


Figure 1: Candidate rankings for all four treatments (Paired Comparison Models for Partial Rankings)

The *Incentive* changes the odds once again: *Eva* (“excellent”) is now ranked worse than both *Leo* (“excellent”) and *Ben* (“good”). *Zoe* gains a leap over external and stereotypically feminine *Jan* once again. **H2** is overall confirmed: Homophily/team fit requirements work to the disadvantage of women compared with stereotypically masculine candidates in a male-dominated environment. Adding a top level request to respect equal opportunity *Law*, *Eva*’s disadvantage through the *Incentive* is not turned around: She remains out of the top 3 behind *Leo* and *Ben* compared with the *Neutral* scenario, where she held the 2nd highest odds of being ranked for an interview. The reference to equal opportunity law works to the detriment of “good” *Zoe*’s odds: She is ranked worst of all candidates again. All in all, as hypothesized (**H3**), mere reference to the law does not alter biased results (all women except for *Amy* are ranked worse than in the gender-blind control scenario).

So far, the professor sub-sample’s justifications have been analyzed for their high relevance to current organizational selection practices. The two most common mentions of perceived qualifications are depicted by applicant and by *Neutral/Visible* treatments:

<i>Label (Visible)</i>	<i>Stereotypical manipulation</i>	<i>Alma mater</i>	<i>Qualifications gender-blind scenario</i>	<i>Qualifications gender-visible scenarios</i>
AMY	Feminine/Exc.	Vienna	personal comp. (12) professional exp. (6)	language comp. (9) professional exp. (7)
EVA	Masculine/Exc.	<i>Randomized</i> Munich/ Vienna	personal comp. (8) technical comp. (4)	technical comp. (8) master's thesis (8)
LEO	Masculine/Exc.	<i>Randomized</i> Munich/ Vienna	education (2) personal comp (2)	master's thesis (8) technical comp. (7)
BEN	Masculine/Good	<i>Randomized</i> Graz/ Vienna	personal comp. (1) professional exp. (1)	personal comp. (5) technical comp. (3)
ZOE	Masculine/Good	<i>Randomized</i> Graz/ Vienna	technical comp. (9) personal comp. (4)	professional exp. (2) education (2)
JAN	Feminine/Good	Graz	language comp. (2) technical comp. (1)	personal comp. (4)

Table 2: Two most frequent mentions of applicant qualifications by professor sub-sample (n=28)

Visibility of applicant gender increases mention of technical and personal competences for all male candidates including external, stereotypically feminine *Jan*. Stereotypically masculine, “good” *Zoe* loses positive mentions for personal and technical competence once she is identified as a woman. “Excellent”, stereotypically masculine *Eva* keeps her technical, yet loses all of the ascribed personal competences when gender becomes visible. “Excellent”, stereotypically feminine *Amy*, the highest ranked applicant across all scenarios, loses all of the personal competences previously ascribed to her in favor of now perceived language competence once she “becomes” a woman.

Discussion

The results reveal gender bias in direct comparison of rankings between the *Neutral* and *Visible* scenarios: The only difference in the task is the addition of gender information, yet both *Eva* and *Zoe* are now outcompeted by equally qualified candidates they previously had an edge over when their gender was concealed. When women report they have to perform better in order to achieve the same career progress as men (Granleese 2004), such self-perception is confirmed in this experiment for selection decisions. Information on applicant's biological sex per se with otherwise identical CVs, a comparison directly tested in the experimental control treatment, works to the disadvantage of women. Interestingly, stereotypically masculine *Zoe*, disadvantaged by her gender alone, in comparison to equally qualified *Jan* can gain an upper hand when stereotypically masculine traits are requested, a role *Jan* may not fit. This advantage seems to disappear for stereotypically masculine, excellent *Eva* when she competes with equally stereotypically masculine, male candidates: "Excellent" *Leo*, and in the *Incentive* and *Law* treatments also "good" *Ben* get ahead of her. These findings suggest highly male-dominated organizational or professional context can put qualified women at an even greater disadvantage than they experience by their gender alone. The result a woman of excellent qualification is out-competed not only by equally qualified, but also by worse qualified male competitors is striking for the homophilous organizational environment. This finding carries worrying implications for women in male-dominated professional domains like science and technology, but also for general management and leadership (Van der Walt&Ingley 2003). Just as the experimental results are able to confirm a homophilous organizational context works to the disadvantage of women in the assessment of their suitability, mere reference to equal opportunity laws exercises no moderating effect on selection bias, at least when competing with a conflicting perception of having to select "fitting" candidates.

Bias for internal candidates is personified in consistently highest-ranked *Amy*. She distinguishes herself from the pair *Eva/Leo* on her qualification level by her stereotypically feminine manipulation and by her "VUT" insider status across the entire sample. Her equivalent of good qualification, *Jan*, who is also stereotypically feminine, but an external candidate, is ranked last in the *Neutral* scenario. This suggests reasons for *Jan's* low and *Amy's* consistently high odds for positive

selection outcomes lie in their insider/outsider status, not their stereotypical femininity.

Gendered ascriptions and differential career outcomes were revealed in experimental treatments with varying manipulations of gender and organizational factors. These ascriptions most likely are implicit, yet proved strong in their impact on applicant career outcome. Organizations aiming to ensure unbiased selection practices need to become aware of the dynamics created by gendered stereotypes, homophily/team fit as well as of potential vulnerabilities and weaknesses of the existing laws.

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