Research Article

Descriptive norms and gender diversity: Reactance from men

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Abstract: Descriptive norms provide social information on others' typical behaviors and have been shown to lead to prescriptive outcomes by "nudging" individuals towards norm compliance in numerous settings. This paper examines whether descriptive norms lead to prescriptive outcomes in the gender domain. We examine whether such social information can influence the gender distribution of candidates selected by employers in a hiring context. We conduct a series of laboratory experiments where 'employers' decide how many male and female 'employees' they want to hire for male- and female-typed tasks and examine whether employers are more likely to hire more of one gender when informed that others have done so as well. In this set-up descriptive norms do not have prescriptive effects. In fact, descriptive norms do not affect female employers' hiring decisions at all and lead to norm reactance and backlash from male employers when informed that others have hired more women.

Keywords: Choice, Decision making, Gender norms, Gender diversity, Nudge, Framing, Reactance, Backlash

Supplements: Open materials

Descriptive norms provide information on others' typical behaviors and can serve as a potential policy tool to "nudge" individuals towards norm compliance (Thaler & Sunstein, 2008). For example, citizens are more likely to vote when they are informed of high rather than low turnout in a previous election (Gerber & Rogers, 2009). Similarly, when told that a majority of individuals do so, people are more likely to pay their taxes, donate, recycle, preserve energy, and make environmentally conscious decisions (Allcott, 2011; Allcott & Rogers, 2012; Cialdini, 2003; Cialdini, Reno, & Kallgren, 1990; Croson & Shang, 2008; Frey & Meier, 2004; Goldstein, Cialdini, & Griskevicius, 2008; Martin & Randal, 2008). The effect of descriptive norms has also been observed in decisions that involve relatively high stakes for the individual: one's employment decision

(Coffman, Featherstone, & Kessle, 2014). Moreover, descriptive norms have been shown to encourage conformity regardless of social desirability. For example, emphasizing that many others steal petrified wood from the forest makes people more likely to do the same (Cialdini et al., 2006), and individuals observing others interacting in a racially biased manner increase their own racial bias (Willard, Isaac, & Carney, 2015). Generally, making people aware of social norms has had prescriptive effects, leading to increases in norm-consistent behavior (Kwan, Yap, & Chiu, 2015). This can be due to the perceived descriptive norms tapping into the need for connectedness and mediating the risks of exposure that may be accompanied by acting on personal preferences alone (Kwan et al., 2015). In addition, the descriptive norm can be considered to carry information and be taken as advice (Cialdini, 2007).

This paper examines whether descriptive norms have prescriptive impacts on gender diversity in contexts where individuals have to select others to perform a task on their behalf. Specifically, using laboratory experiments, we examine whether social information can influence

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the gender composition of a group of people ('employees') selected by others ('employers') in a work context. Our findings could be relevant for various contexts outside of the lab, including any setting where principals choose (i.e. 'hire') agents to perform a task on their behalf. This could include employer-employee relations and has implications for diversity in the private and public sectors.[1]

Indeed, diversity within the public sector has been under examination for a number of years. Some have called for a "representative bureaucracy" (Selden, 1997), and others have highlighted the challenge of attracting the best talent for public service (Light, 2000). Increasing gender diversity in the public sector has also received much attention, with research presenting specific workplace characteristics and environments that support it (Opstrup & Villadsen, 2015). In a similar vein, one study found that women were more likely to ascend to leadership positions in US federal regulatory agencies when an organization was in a period of crisis (with higher risk of failure) and when women were in elected positions (Smith, 2015).

Our research aims to contribute to this literature by examining how descriptive norms affect selection decisions that shape gender diversity in stereotypically male and female contexts. We also lend support to an emerging literature, spearheaded by the Behavioral Insights Team in the UK (The Behavioural Insights Team, 2018), which uses behavioral insights to advance diversity in the public sector, including the police force (Linos, 2017). In addition, this paper contributes to the ongoing work in the UK, which aims to make talent management more evidence-based and inclusive (UK Government, 2016). Some of the UK Government's recommended strategies include "name-blind recruitment," and most relevant to our research, providing benchmarks to create norm cascades or "norm nudges" for others to follow suit.

However, in contrast to the norm nudges applied in other domains, most discussions concerning gender diversity focus peoples' attention on the *lack* of women in traditionally male-dominated (and to a lesser extent, the lack of men in traditionally female-dominated) fields. For example, the *Economist* (2014) reports, "Almost everywhere women are in a minority in government cabinets." The UN Women's (2015) website also states, "Women are underrepresented as voters, as well as in leading positions, whether in elected office, the civil service, the private sector or academia." In the US, low percentages of women senators (20%), Fortune 500 CEOs (4.8%), women serving on boards (16.9%), and tenured faculty (21.2%) are often cited examples (Catalyst Research, 2014a, 2014b; Curtis & Thornton, 2013-2014; Rutgers University, 2016). The fact that only 22 percent of members of parliament across the world are women remains the focus of discussion regarding underrepresentation of women in political leadership (Inter-Parliamentary Union, 2016). Similarly, while not discussed quite as much as the "missing women" in leadership positions, the "missing men" in elementary school education (with, for example, only 10.2 percent male elementary school teachers in the US) has garnered attention in academia and the popular press (Goldring, Gray, & Bitterman, 2013).

According to the available research on social norms, the focus on the under-representation of a particular group could potentially be turning descriptive statistics into prescriptive norms that suggest the fraction of the underrepresented gender in these settings be kept small. This paper aims to determine if this is in fact the case and whether different information, focusing on majority behavior, would have similar prescriptive effects as in other domains. For example, instead of focusing on the absence of women in leadership or men in teaching, one could focus on the majority of companies with gender diverse boards or the majority of schools with teachers from diverse backgrounds.

What impacts descriptive norms have on the gender composition of a group is truly an empirical question given that the gender domain is quite different from the other areas in which descriptive norms have been studied thus far. A handful of earlier studies suggest that descriptive norms are not effective in nudging behavior in every domain and may even lead to increases in undesirable behaviors. For example, peer social norm information has had negative effects on the academic performance of the lowest ability students (Carrell, Sacerdote, & West, 2011), and savings of certain employees (Beshears, Choi, Laibson, Madrian, & Milkman, 2011). In addition, Costa and Kahn (2013) find that unlike Democrats, when Republicans were made aware

of their relatively low electricity usage, they turned up their thermostat and switched off the light less often.[2] The authors propose that this "boomerang effect" may be the result of Republicans not believing that reducing energy saves the planet and thus not having internalized the norm that considers the reduction of energy usage to be a good thing. Maybe, for a descriptive norm to lead to norm-consistent behavior, the recipients may need to have internalized the norm to some extent.

This may be especially relevant in the gender domain, as gender diversity might not be generally accepted or desired. Increasing gender diversity in an organization may well have distributive consequences, requiring the overrepresented gender to become less represented. Thus, descriptive norms emphasizing the underrepresented gender's gains could lead to perceived intergroup threat by the traditionally overrepresented gender. This could motivate members of the traditionally favored group to take actions that protect or improve their gender identity and status (Jetten, Spears, & Postmes, 2004; Schmitt, Lehmiller, & Walsh, 2007; Tajfel, 1982), resulting in backlash (Beaman, Chattopadhyay, Duflo, Pande, & Topalova, 2009; Koenig, Ahmed, Hossain, & Mozumder, 2003; Luke & Munshi, 2011; Willer, Rogalin, Conlon, & Wojnowicz, 2013).

Understanding the impact of descriptive norm information in the gender domain may inform approaches used to increase gender diversity. This has become a goal in a large number of settings, including politics (Chattopadhyay & Duflo, 2004; Krook, 2009), science, technology engineering and math (STEM) fields (Handley, Brown, Moss-Racusin, & Smith, 2015; Stout, Dasgupta, Hunsinger, & McManus, 2011) and business (Ahern & Dittmar, 2012; Bohnet, 2016; Davies, 2014). Indeed, some policy makers have already started to incorporate norm nudges in their gender-related communication. In 2011, then Secretary of State for Business, Innovation and Skills in the UK, Vince Cable, initially talked about the lack of women on corporate boards arguing that "Currently 18 FTSE 100 companies have no female directors at all and nearly half of all FTSE 250 companies do not have a woman in the boardroom" (UK Government, 2011). Later, in 2013, he switched to focusing on the fraction of boards which are gender diverse: "Currently 94 of the FTSE 100

companies count women on their boards as do over two thirds of all FTSE 350 companies" (UK Government, 2013). While the fraction of women on corporate boards in the United Kingdom increased dramatically from 12.5 percent in 2011 to 22.8 percent by the end of 2014 and to more than 25 percent by 2015 (Davies, 2011, 2014, 2015), the UK employed a large number of approaches to move the needle. Therefore, because of the absence of a controlled environment, we cannot draw any inferences about the specific impact of the norm nudges used on gender diversity.

This paper attempts to address this by running a series of laboratory experiments to study how descriptive norms affect the gender diversity in hiring decisions. Specifically, we have 'employers' select how many male and female 'employees' they want to hire for male- and female-typed tasks and examine whether employers are more likely to hire more of one gender when informed that others have done so as well. In our experiments, descriptive norms did not have prescriptive effects on gender diversity. In fact, descriptive norms did not affect female employers' hiring decisions at all and led to male reactance when the descriptive norm information favored female candidates. When informed that others had hired more women, male employers hired fewer female candidates than when no norm information was given.

The sections that follow discuss the conceptual frameworks, introduce the experimental design, and present our results. Finally, the last section concludes and discusses our research's implications.

Conceptual Framework:
Norm Conformity and Norm Reactance

The existing literature on descriptive norm nudges hinges on the theory that individual decision makers like to conform to social norms. Norm conformity is supported by numerous studies where descriptive norms have led to norm-consistent behavior (Cialdini et al., 2006).

However, gender-based descriptive norm nudges may not necessarily have prescriptive effects, and instead, result in backlash and norm reactance. Additionally, reactance may apply to all employers, independent of their own gender. Alternatively, reactance may be particularly

relevant for one gender, and may interact with the gender of the employee. Our experiments will allow us to distinguish between norm conformity and reactance and how they relate to a particular gender.

Reactance from all

Norm information might conflict with people's preferences for equality and fairness. Therefore, if a norm favors one gender over another, individuals may seek to correct for the perceived inequality. If indeed preferences for equality are at play, we should observe this behavior regardless of the gender being disfavored. Therefore, if employers only choose to correct for the inequality faced by one gender and not another, this cannot be driven by preferences for equality.

Another explanation for observing norm reactance from all could be due to the norm information conflicting with individuals' preconceived notions, or stereotypes, of the appropriate fractions of men and women that should be engaged in a particular task. This may lead them to correct the wrongs others have committed. For example, people may believe that teaching is a woman's job and leading, a man's. If others have chosen more male teachers and more female leaders than an individual deems appropriate, he or she may want to compensate for this. This explanation is not generic to gender but could apply to any domain where people's beliefs about what is right, conflict with the norm (Costa & Kahn, 2013).

Reactance from the disfavored gender

In many of the domains studied so far (e.g., voting or energy conservation), norm-conformity may be individually costly but makes everyone else better off. Conforming to the norm means contributing to a public good. In contrast, the gender domain raises distributive concerns and can lead to intergroup threat: an increase in gender diversity requires the overrepresented gender to become less represented, reducing the group's relative numbers and potentially, its status (Tajfel, 1982; Tajfel & Turner, 1986). If the norm information threatens the representation and status of the members of specific groups, this can motivate them to take actions that improve their group's social identity (Fiske, Cuddy, Glick, & Xu, 2002; Jetten et al., 2004; Roccas & Schwartz, 1993;

Schmitt et al., 2007; Tajfel, 1982). Therefore, this zero-sum environment may lead to resistance, instead of conformity, by the group being disfavored in the norm information.

Reactance from men

High-status group members may be more likely than the low-status group to view increases in intergroup equality negatively, namely, as a loss to their higher status (Eibach & Keegan, 2006; Sidanius & Pratto, 1999). As a result, when descriptive norms provide unfavorable information about their gender group's status, norm-reactance might be particularly pronounced amongst the traditionally higher-status group: men. Indeed, while evidence on the strength of typical group identification by men and women is mixed (Rudman & Goodwin, 2004; Schmader, 2002; Spoor & Schmitt, 2011), studies suggest that men respond more strongly to intergroup threat than women (Hong & Bohnet, 2007; Van Vugt, De Cremer, & Janssen, 2007). For example, Spoor and Schmitt (2011) found that when made aware of women's progress over the past few decades, young men reported higher levels of anxiety and a stronger sense of solidarity and protectiveness towards their own gender, whereas women reported weaker group identification in response to intergroup comparisons.

Moreover, studies have found support for the masculine overcompensation thesis, where "men react to masculinity threats with extreme demonstrations of masculinity" (Willer et al., 2013). For example, when the socially prescribed dominance of men is challenged by increased female economic independence, studies have found evidence of male backlash in the form of increased domestic violence (Koenig et al., 2003; Luke & Munshi, 2011). In addition, men have shown reactance towards female leadership. Beaman et al. (2009) find that while all men demonstrate a strong explicit bias against women leaders, this bias worsened in areas where men were required to elect a female leader under a quota system (even though male implicit preferences for female leaders remained unaffected) as compared to areas where there was no quota for female leadership. Accordingly, norms that provide information on improved female status and emphasize women's position of gain may be perceived as threats to male

masculinity and incite "masculine protest" (Adler, [1910] 1956).

The following sections present our experiment where we test the impact of descriptive norm information and distinguish between norm conformity and whether there is reactance and backlash from all, from the disfavored gender, or only from men.

Experimental Design

We examine the effect of descriptive gender norm information on hiring decisions that involve male and female 'employees' (i.e., laboratory subjects assigned to this role) using a series of laboratory experiments. The experimental design consisted of two stages. In Stage 1, we gathered real data to establish the gender norms in hiring by observing the hiring decisions of a set of 'employers' (laboratory subjects assigned to this role). In Stage 2, the impact of these gender norms on the hiring decisions of another set of employers was studied. The individual stages of the experimental design are explained in turn.

Stage 1: Creating Gender Norms
In the first stage of our experiment, we asked a set of employers to decide which employees they wanted to hire for both a stereotypical male-typed task (a math task) and a stereotypical female-typed task (a verbal task).[3] The set of candidates that were described to the employers were preselected from an existing pool of study participants[4] that had previously participated in three rounds of the tasks (Bohnet, van Geen, & Bazerman, 2016).[5] These candidates were preselected so that characteristics and performance distribution were as comparable as possible across genders.

Our employers were presented with 10 male and 10 female candidates to choose from for both, the math and the verbal task. To prevent potential framing effects, the candidates were (truthfully)

referred to as "previous participants" to the employers, and their individual information was presented to the employers on randomly ordered index cards that displayed (i) participant number, (ii) gender, and (iii) performance scores for two rounds on the task under consideration. In order to reduce the salience of gender, information on participant race, nationality, and whether they were a Boston area resident was also included.[6] The stack of twenty candidates for each task had similar mean and variance in their scores although this information was not provided to the employers. Table 1 presents an overview of candidate characteristics.

The employers were then asked to select five employees from the stack of 20 cards separately for the math and verbal tasks. They were given two performance scores for each candidate and told that the third score of their five selected employees would determine their earnings. Employers were thus incentivized to focus on the potential performance of the candidates.[7] The profit-maximizing employer should use the performance information from the first two rounds (score 1 and score 2) and the other candidate information to select those five candidates that would have the highest expected round 3 performance scores.

In each set of candidates, the top six scoring individuals (in each task) were three women and three men.[8] The top four scoring individuals were two men and two women, where each gender pair had the exact same scores. The two next-best candidates (one male and one female) in each group did not have the same exact scores, but had the same average scores in the two rounds: (13, 15) and (14, 14) in the math task, and (11, 15) and (13, 13) in the verbal task (i.e. one individual had a low variance, identical score set, and one individual had a high variance score set).[9] Since the employer had to choose five employees, and the first four best employees were "no-brainers", the unbiased, profit-maximizing employer's fifth decision was

Table 1
Descriptive Statistics of Candidates

Twenty Verbal Task Participants	Score 1	Score 2	Twenty Math Task Participants	Score 1	Score 2
Average Female Score	10.6	10.8	Average Female Score	9.5	9.6
Average Male Score	10.8	10.4	Average Male Score	9.5	9.8
Female Score Variance	13.6	10.0	Female Score Variance	18.5	17.2
Male Score Variance	13.5	10.7	Male Score Variance	14.7	14.8
Female Max Score	16	15	Female Max Score	15	15
Male Max Score	16	15	Male Max Score	15	15
Female Min Score	4	5	Female Min Score	3	4
Male Min Score	5	5	Male Min Score	4	4

between those two remaining individuals, i.e. the fifth-place contenders. A risk-averse employer would prefer the low variance fifth-choice contender. Accordingly, we varied whether that candidate was male or female.

To test for the impact of different norms in Stage 2 but still report Stage 1 outcomes truthfully, we aimed to enhance variation in the choices of Stage 1 employers. Our goal was to observe at least one session where most Stage 1 employers chose a group of majority female employees and at least one session where most Stage 1 employers chose a group of majority male employees. We sought to do this without fundamentally changing the experimental design so that the identical design could be replicated in Stage 2. Thus, we varied the order in which employers were confronted with the two tasks, with the math task presented either before or after the verbal task in an experimental session.[10]

Stage 1: Experimental Procedures
We ran four sessions in Stage 1, two with the math task first and two with the verbal task first. They were conducted in the Harvard Decision Science Laboratory in Cambridge, MA with a total of 53 laboratory subjects. All of our participants (i.e. employers) remained anonymous throughout the study and were only identified by randomly assigned code numbers. For each task, employers were informed about the payoff structure and received an explanation of the task the employees had to perform and viewed a sample task. Subsequently, they were given the 20 cards (randomly shuffled) to make their five selections for that task. After employers made their decisions, the twenty cards were collected, and the next task was presented (which included another set of 20 cards for that task). Once the hiring decisions were made for the two tasks, subjects participated

in a lottery choice decision task to evaluate their risk preferences and answered a demographic questionnaire. At the end of the session, they were informed of their earnings and paid in cash (their earnings plus a $10 show-up fee). The experiment was computerized and programmed using Z-tree software program (Fischbacher, 2007). The instructions were read out loud and can be found in Appendix A.

Identifying Gender Norms
Table 2 displays the outcome of Stage 1-employers' hiring decisions. In session 1, when the math task was presented first, we observed slightly stereotype-contradicting hiring behavior with 62% of employers in the math task and 46% of employers in the verbal task selecting female majority employee groups. In contrast, when the verbal task was presented to the employers first (Session 2), we observed stereotypical hiring behavior with only 29% of individuals choosing more female employees for the math task and 71% choosing more women for the verbal task. Sessions 3 and 4 did not yield any variation in hiring behavior, with most employers choosing female majority groups for both tasks.

Thus, the observed variation in Sessions 1 and 2 may well not be due to order effects. However, this did not matter for our purposes. All we wanted to achieve was to observe some variation so that we could replicate these sessions in the next stage and truthfully report what the outcome (i.e. hiring norm) of a previous experimental session had been.

Stage 2: Testing the Impact of Norm Information on Hiring
To test the impact of descriptive norms on hiring, we replicated Sessions 1 and 2 with a new group of employers who made hiring decisions in Stage 2

Table 2
Stage 1 Hiring Norms, Percentage of Employers Hiring Female Majority Groups

	Session 1 Math First	Session 2 Verbal First	Session 3 Math First	Session 4 Verbal First
Math	61.5%	28.6%	69.2%	69.2%
Verbal	46.2%	71.4%	61.5%	61.5%
Total Subjects	13	14	13	13
Female Subjects	53.8%	78.6%	53.8%	76.9%

using the same instructions and the same 20 candidates as the Stage 1 employers. The only difference in Stage 2 was that employers were informed of what Stage 1 employers had done in their respective sessions. We ran two control conditions, one with math first and one with verbal first, where no information was provided on the fraction of women and men hired (i.e. "In a previous experimental session exactly like yours, people chose both women and men.").

We also examined the potential impact of framing on employee selection. In one frame of the norm, the male frame, the norm's focus is on the Stage 1 employers choosing more men and placing men in a position of gain (i.e. "In a previous experimental session exactly like yours, X% of the people chose more men than women."). In the other frame, the female frame, the focus is on the individuals who are choosing more women, placing women in a position of gain (i.e. "In a previous experimental session exactly like yours, (1 − X)% of the people chose more women than men.").

Hence, Stage 2 consisted of two control conditions and four treatment conditions – all are summarized in Table 3.

Stage 2: Experimental Procedures
The experimental sessions for Stage 2 included 192 participants (i.e. employers) and were conducted in twenty-five sessions using the student subject pool at the Harvard Decision Science Laboratory in Cambridge, MA. The two control and four experimental treatment conditions employed equal proportions of female (18 out of 32 participants) and male participants (14 out of 32 participants), with a total of 108 female subjects and 84 male subjects. As in Stage 1, all Stage 2 participants remained anonymous throughout the study (were only identified by code numbers), the experiment was programmed using Z-tree (Fischbacher, 2007), and the instructions were read out loud (Appendix B). Stage 2 results are discussed in the next section.

Results: The Effects of Descriptive Norms

In Stage 2, we studied the impact of descriptive norms on gender diversity in hiring decisions. First, we present our control treatment results with Figure 1 depicting employers' preferences where no information on previous employer choices was provided (Control conditions 1 and 2, N=64). The likelihood that male employers chose female majority employee groups was 42.9% in the math task and 60.7% in the verbal task. While directionally suggestive of stereotypical hiring, these differences are not significant compared to an equal split (math task: $z = -0.75$, $p = 0.45$; verbal task: $z = 1.13$, $p = 0.26$). Among female employers, 52.8% chose female majority employee

### Table 3
Descriptive Norm Information Used in Stage 2

Treatment	Frame	Task Order	Math Norm	Verbal Norm
			"In a previous experimental session like yours, …"	
Control 1	None	Math First	people chose both women and men	people chose both women and men
Control 2	None	Verbal First	people chose both women and men	people chose both women and men
Treatment 1	Female	Math First	62% of the people chose more women than men (FF)	46% of the people chose more women than men (MF)
Treatment 2	Female	Verbal First	29% of the people chose more women than men (MF)	71% of the people chose more women than men (FF)
Treatment 3	Male	Math First	38% of the people chose more men than women (FF)	54% of the people chose more men than women (MF)
Treatment 4	Male	Verbal First	71% of the people chose more men than women (MF)	29% of the people chose more men than women (FF)

Notes: FF = Female Favoring Norm; MF = Male Favoring Norm

Figure 1
Percent Female Majority Groups Selected without Descriptive Norm Information
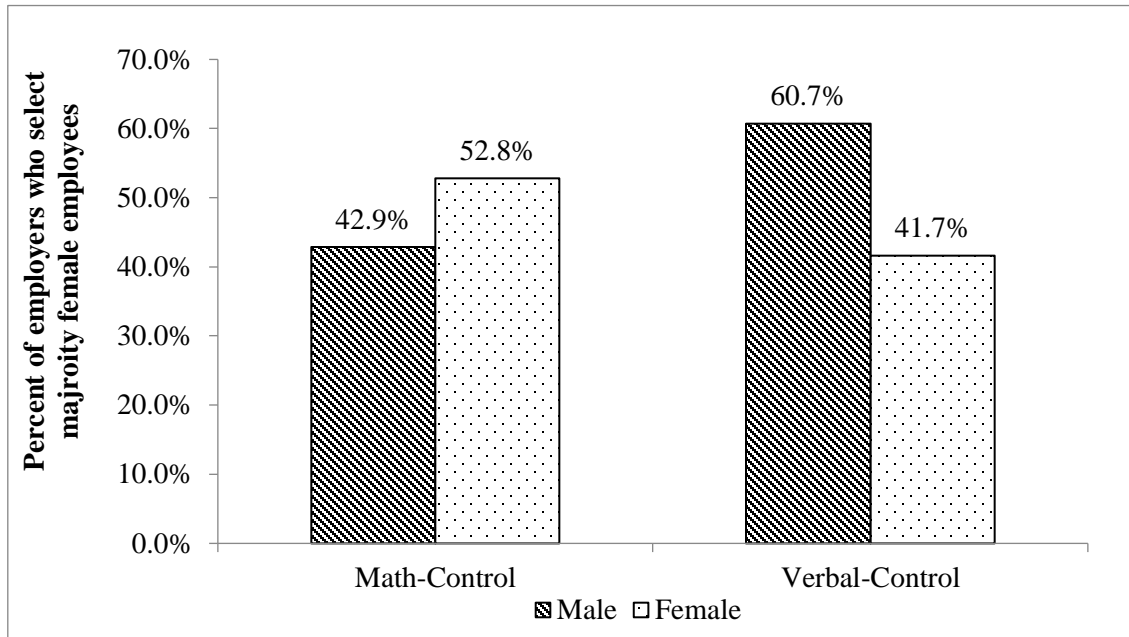
Figure 2
Percent Female Majority Groups Selected with Descriptive Norm Information
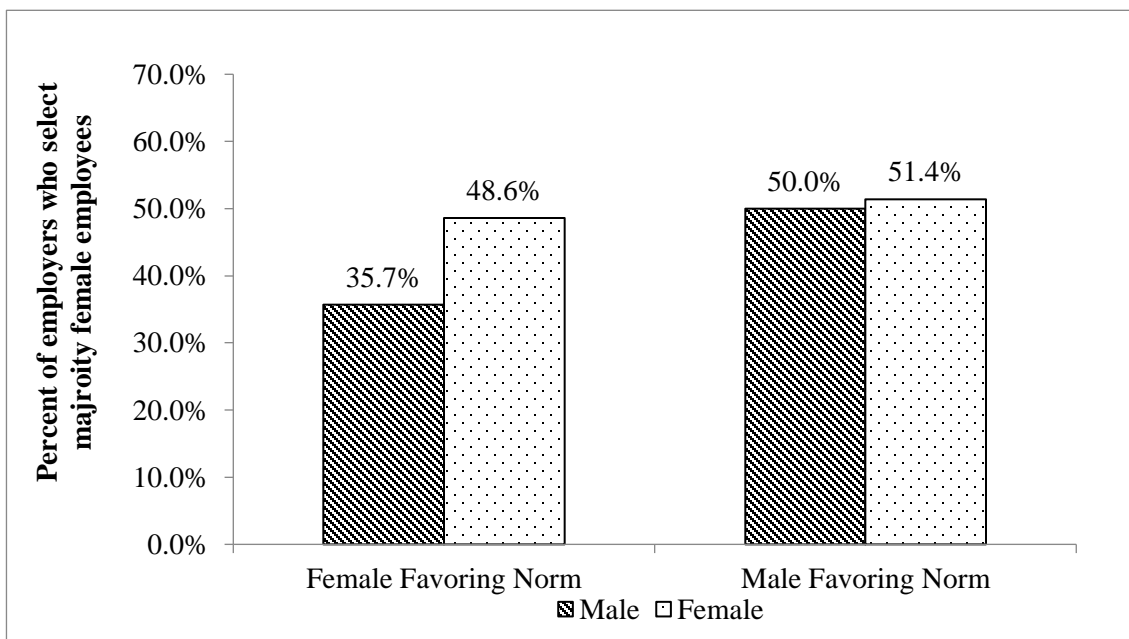
groups in the math task and 41.7% chose female majority employee groups in the verbal task; also not significant compared to an equal split (math task: z = 0.33, p = 0.74; verbal task: z = -1.00, p = 0.32). Therefore, neither male nor female employers showed significant stereotypical hiring tendencies, and we found no evidence of gender specific discrimination in the control treatments.[11]

Next, we examine whether knowing what Stage 1 employers had done affected Stage 2 employer behavior in treatment conditions 1-4. We do not find any evidence in support of descriptive norms having prescriptive effects: employers in Stage 2 were not more likely to choose an action when employers in Stage 1 had done so as well. In contrast, male employers were less likely to choose the same action as others in one particular instance: men showed reactance to norms that favored women.

Figure 2 presents our results. When Stage 2 employers learned that previous employers in Stage 1 had chosen mostly women, 35.7 percent of second-stage male employers chose female majority groups, which is significantly below an equal split (z = -2.14, p = 0.03). Specifically, compared to an equal split, when previous employers had favored women, the likelihood that men chose female majority groups was 39 percent in the math task (z = -1.16, p = 0.24) and 32 percent in the verbal task (z = -1.90, p = 0.06).

However, male Stage 2 employers were not affected by norms that favored men. Exactly 50 percent of the employers chose female majority groups in both the math and the verbal task when they received norm information that favored men. Therefore, it is unlikely that the norm reactance by men is due to preferences for equality given that it is only observed when men are being disfavored by the norm information. Compared to the control condition, they chose somewhat less stereotypically but this difference is not significant.

In contrast, female Stage 2 employers were not influenced by descriptive norm information. When norm information favored women, the likelihood that women selected majority women employees was 50 percent in the math task and 47 percent in the verbal task. The likelihood that women chose majority women employees in norm conditions that favored men was 55 percent in the math task and 47 percent in the verbal task. None of these likelihoods significantly differ from an equal split.

Table 4 presents a regression analysis where we compare employers' choices in situations where the norm information favored women or men with our control treatments where no norm information was provided.[12] Column 1 shows that Stage 2 male employers were significantly less likely to choose female majority groups when the information favored women as compared to treatments where no information on norms was provided. In fact, the average male employer was 20 percentage points more likely to select a group of mostly women when no norm information was provided than when the norm favored women (p < 0.05). Column 3 also shows that this effect is significant: male employers confronted with norms that favor women were the only individuals reacting to this information by choosing significantly fewer female majority groups than everyone else.

Therefore, our results do not support reactance based on concerns for equality nor reactance by the disfavored group, as women did not show any reactance to earlier employers favoring men. Rather, our results suggest that only the high-status group, men, showed reactance when confronted with earlier employers favoring the low-status group: women.

Further analysis of our results provides insights into the mechanisms behind this male reactance. In our treatment conditions, the information on previous employers' choices was provided to study participants with different gender frames. The frame either focused on men being in the gain position as compared to women (i.e. the male frame) or women being in the gain position as compared to men (i.e. the female frame). While the gender frame of the norm information seems to have no effect on female employers (Figure 3), the results show that male employers were somewhat sensitive to the frame in which the norm information was expressed: men showed marginally significant reactance to norm information that focused on women being in a position of gain as compared to men.[13] When the norm information was presented with a female frame, 37.5 percent of male employers chose majority women employees (z = -1.87, p = 0.06). More specifically, when norm information was presented in a female frame, men chose majority women employees with 39.3 percent likelihood in the math task (z = -1.13, p = 0.26) and 35.7 percent in the verbal task (z = -1.51, p = 0.13).

Table 4
The Effect of Descriptive Norm Information on the Percent of Female Majority Groups Selected, Marginal Effects at Mean

	(1) Male Subjects	(2) Female Subjects	(3) Male & Female Subjects
FemaleFavoringNorm	-0.197**	0.009	-0.073
	(0.093)	(0.087)	(0.064)
MaleFavoringNorm	-0.049	0.037	0.007
	(0.100)	(0.088)	(0.065)
Math	-0.034	0.077	0.027
	(0.078)	(0.069)	(0.051)
Male			-0.026
			(0.052)
FemaleFavoringNorm*Male			-0.140*
			(0.083)
MaleFavoringNorm*Male			-0.036
			(0.086)
Control Variables	YES	YES	YES
Observations	168	216	384
Wald Chi2	9.99	7.96	9.89
Psuedo-R2	0.042	0.030	0.019

Notes: Each specification in a Probit regression, controlling for order of which the tasks were presented, age, education, income, race, nationality, and risk tolerance (based on Holt and Laury (2002), measured by the number of risky choices). Marginal effects are reported in percentage points. The dependent variable is the selection of a female majority employee group. Standard errors are in parentheses. *** Significance at the 1 percent level. ** Significance at the 5 percent level. * Significance at the 10 percent level.

Figure 3
Percent of Female Majority Employee Groups Selected with Framing
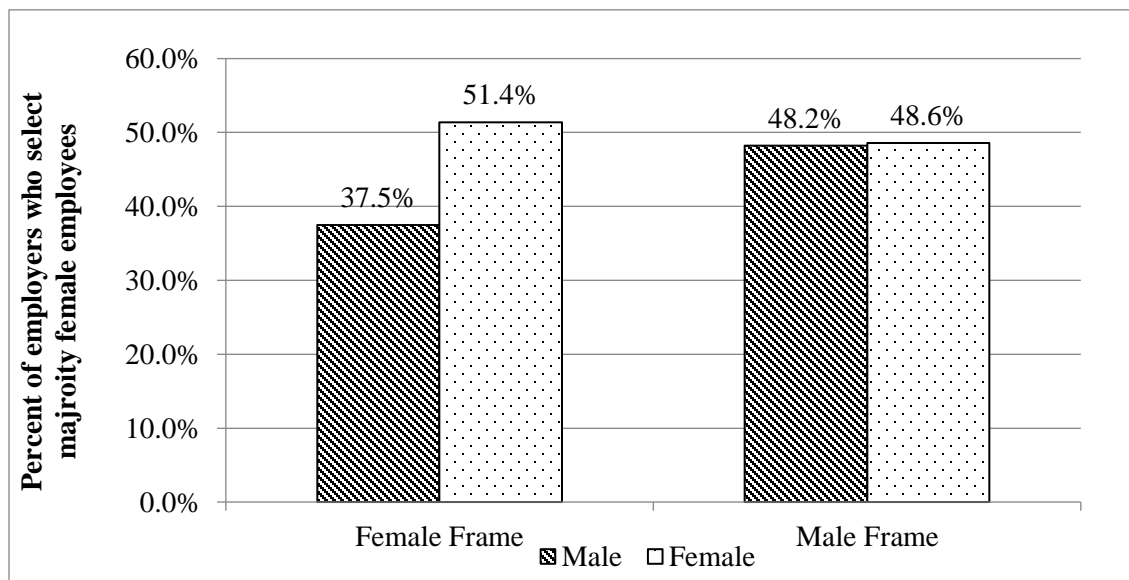
Figure 4
Percent Female Majority Groups Selected with Descriptive Norm Information and Framing
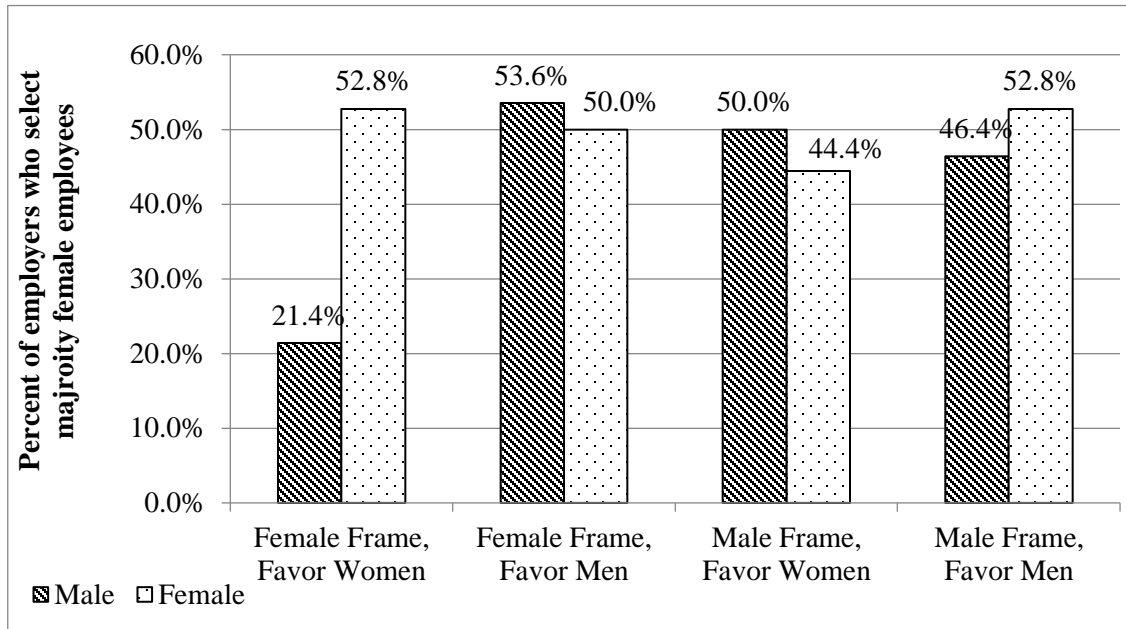
When the male frame was used, this effect disappeared and male employers were equally likely to choose men and women in the math and the verbal tasks.

Moreover, when descriptive norms favored women and were described using a female frame, male employers exhibited particularly pronounced reactance (Figure 4). In this case (e.g. "71% chose more women than men"), only 21 percent of the male employers chose female majority groups, which is significantly below an equal split ($z = -2.17$, $p = 0.03$). This also significantly differs from the same descriptive norm information being provided with a male frame (namely, that "29% chose more men than women"), where 50 percent of the male employers chose female majority employee groups

Table 5 presents a regression analysis that confirms these results, with both control conditions as our baseline comparison. Column (1) shows that male employers were 33 percentage points less likely to choose female majority groups when exposed to a female favoring norm with a female frame as compared to treatments with no norm and frame. This effect is highly significant. In addition, in column (3) we observe the average male employer is 29 percentage points less likely

to hire female majority groups than the average female employer when provided with norm information that favors women and places women in the position of gain by using a female frame ($p < 0.01$).

Reviewing our results, we find that descriptive norms do not lead to prescriptive norm-abiding behaviors in the gender domain studied here. Female employers were not affected by norm information or its frame. Male employers exhibited a pronounced reactance to norms that favored women while they were not affected by norm information that favored men. Their reactance was particularly pronounced when the norm information, favoring women, was presented in a female frame, which highlighted women's gains.

Discussion and Conclusion

Our research examines the impact of descriptive norm information on gender diversity in selection contexts by studying whether employers are more likely to hire more of one gender for a stereotypically male or female task when informed that others have done so as well. When we did not invoke any descriptive social norms and provided

Table 5
The Effect of Descriptive Norm Information & Framing on the Percent of Female
Majority Groups Selected, Marginal Effects at Mean

	(1) Male Subjects	(2) Female Subjects	(3) Male & Female Subjects
FemaleFavoringNorm	-0.180*	-0.019	-0.070
	(0.109)	(0.100)	(0.074)
MaleFavoringNorm	-0.085	0.028	-0.002
	(0.124)	(0.109)	(0.080)
Math	-0.035	0.077	0.027
	(0.079)	(0.069)	(0.052)
Male			-0.002
			(0.054)
FemaleFavoringNorm*Male			-0.108
			(0.094)
MaleFavoringNorm*Male			-0.030
			(0.100)
FemaleFrame	-0.053	0.049	-0.016
	(0.107)	(0.095)	(0.069)
FemaleFrame*FemaleFavoringNorm	-0.326***	0.067	-0.121
	(0.094)	(0.106)	(0.077)
FemaleFrame*Male			-0.038
			(0.094)
FemaleFrame*FemaleFavoringNorm*Male			-0.294***
			(0.091)
Control Variables	YES	YES	YES
Observations	168	216	384
Wald Chi2	15.23	8.35	16.36
Psuedo-R2	0.065	0.033	0.031

Notes: Each specification in a Probit regression, controlling for order of which the tasks were presented, age, education, income, race, nationality, and risk tolerance (based on Holt and Laury (2002), measured by the number of risky choices). Marginal effects are reported in percentage points. The dependent variable is the selection of a female majority employee group. Standard errors are in parentheses. *** Significance at the 1 percent level. ** Significance at the 5 percent level. * Significance at the 10 percent level.

no information on what other employers have done, neither male nor female employers showed significant stereotypical hiring tendencies (even though directionally, male employers tended to choose employees stereotypically).

However, when presented with information on what others have done, male employers tended to "correct" for others having chosen more women than men: they chose more male employees when others had chosen more women across the two tasks. However, male employers were not affected when others had chosen more men and did not "correct" for the prior behavior of others who had favored men.

In contrast, female employers appear hardly affected by the norm information at all. Instead, on average, they chose about 50 percent women and men independent of the task, norm and frame. Therefore, descriptive social norms did not have prescriptive effects as they do in other contexts.

They did not affect women and led to reactance among men, with male employers choosing more men when others had chosen more women. Instead, our results suggest that men, the traditionally high-status group, react to others' behaviors threatening the representation and status of their gender group. As only men showed this behavior, and only when descriptive norms favored women rather than men, we can exclude generic concerns about equality as a motivator of behavior. Additionally, men's reactance was particularly pronounced when the norm information was presented to remind them of women's gains, further suggesting reactance being due to perceived intergroup threat by the high-status group.

To what extent we find such norm reactance to female-favoring norm information from men in the field is an open question. When using descriptive norms as a nudge, it appears as if the UK has been successful in promoting more gender diversity on corporate boards by invoking the norm that most other boards were gender diverse. However, given that many different changes were introduced at the same time, we do not know what the impact of this particular change was. It might as well have been neutral or even negative, compensated for by other interventions such as, naming and shaming of non-compliant companies in the media.

At the same time, reactance against women has been found in other situations where women appear to be favored. For example, Dezso, Ross, and Uribe (2016) found that once a company hires a woman to a top-tier job, the probability of a second woman to land a top position at the same firm drops by about 50 percent – though, companies with female CEOs did slightly better in this regard. Gender quotas that favor women in the field, while obviously more forceful than a descriptive norm nudge, have also been reported to yield reactance (Beaman et al., 2009). Moreover, Leibbrandt, Wang, and Foo (2015) found in a laboratory experiment that subjects who have been favored by a quota experience backlash from coworkers.

Our experiments differ in some important respects from these interventions. First, we use a norm nudge that does not impose any policy mandates such as a quota system. In addition, and perhaps most notably, we did not start out with employers having very gender biased preferences

in the control conditions. Thus, there was little to 'correct' for to start with. In contrast, the fractions of female leaders and male elementary school teachers rarely surpass 20 percent. By studying female majority (and male majority) groups, we might have created more male reactance than what we would have observed if the fraction of women was increased from, say about 10 to 26 percent, as was successfully done for corporate boards in the UK.

Additional work will have to show how generalizable our findings are to contexts outside of the laboratory where gender norms and reference points might differ—be this in the private or the public sector. In the laboratory, we conclude that women do not appear to be influenced by gender diversity norms at all, neither are men when the norm information prescribes hiring majority male groups. However, men seem uncomfortable with following norms that suggest hiring female majority groups—they react against them.

Notes

1. Our experimental setup does not directly relate to voting decisions. This is because in our experiment, 'employees' are selected by only one 'employer' and work in an individual rather than a collective choice environment.
2. See also: Perkins, Haines, & Rice, 2005; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007; Wechsler et al., 2003; Werch et al., 2000.
3. See Bohnet et al (2016) for a discussion on the stereotypical perception of both tasks.
4. This was done to ensure truthful presentation to all study subjects (instead of generating artificial data), as is standard practice in behavioral economics research.
5. The incentivized math task they performed consisted of adding as many rows of five two-digit numbers and the incentivized verbal task involved finding words in a matrix during a given time period. The participants performed each task at least three times.
6. We made sure that the profiles of the two fifth best candidates were identical in all these additional characteristics so that 'employers' could only base their decision between those

7. two candidates on the performance scores and gender.

7. For example, in the math task, if the five chosen employees added up 50 rows of numbers correctly in the third round, they would score a total of 50 points and the employer would receive $10 (50 x $0.20).

8. Besides gender and performance scores, all attributes of the top six performing candidates were identical.

9. The scores were not presented in any particular sequence and this was mentioned to the study participants. The scores presented are two of the three performance round scores, not the first two of three performance round scores. Therefore, the high variance profiles would not necessarily suggest learning.

10. We had no view on how order would affect behavior, other than possibly creating variation in at least some of the sessions.

11. Men were no more likely to stereotypically choose female majority employee groups in the verbal task than women (t-test yields p = 0.13), and there was an insignificant gender difference in employee selection for the math task (p = 0.44).

12. The low (adjusted) R^2 in our regression analysis can be a consequence of large population variance in our sample.

13. When female frame is used, the likelihood that women select female majority employee groups was 52.8 percent in the math task and 50 percent in the verbal task. When the male frame is used, the likelihood that women select female majority employee groups was 52.8 percent in the math task and 44.4 percent in the verbal task. None of these likelihoods significantly differ from an equal split.

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