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ABSTRACT

The Managerial Labor Market and Gender Gaps in Beliefs About Own Ability

Despite considerable changes in the gender gap regarding educational qualifications and labor force participation, the share of female managers has changed only slowly and continues to be low. This paper adds new evidence to the study of the dearth of women in top managerial positions in firms by documenting and analyzing data on beliefs about own managerial abilities collected from survey of a large sample of Danish managers. We develop measures for gender stereotype attitudes and beliefs about ability, distinguishing between masculine and feminine skills, and examine whether these are correlated with each other and differ by gender. We find that especially female C-level managers differ substantially from managers at levels below. Female medium and lower-level managers' beliefs in own ability is lower than for their male peers for two reasons: weaker prescriptive gender stereotype attitudes and lower miscalculation of abilities, possibly less overconfidence. The weaker ability beliefs contribute to reduced self-confidence and career ambitions and to the explanations for the lack of women in top positions.

JEL Classification: J16, D83, D84, M51

Keywords: beliefs about own ability, gender stereotypes, agentic and communal skills, career aspirations, managerial labor markets

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1. Introduction

Several studies have documented the dearth of women in top management positions and have shown that closing the gender gap could significantly increase global GDP (see e.g., World Economic Forum (2024)). Many explanations have been offered for understanding this observation, ranging from theories of classical discrimination, statistical discrimination, signaling, differing preferences for careers and gender stereotyping mechanisms. Beliefs about others' abilities as managers play an important role especially in theories of discrimination. Less attention has been paid to beliefs about own abilities and yet, these can also play a role as they influence self-confidence and career ambitions. In this paper, the focus is on beliefs in own abilities and the importance of mechanisms related to gender stereotypes and in particular to gender differences in beliefs about own abilities in the role as a successful manager.

We use data collected by surveys of Danish managers. Although Denmark (and the other Nordic countries) was among the earliest countries to have high female labor force participation rates and reduced gender gaps in wages and educational qualifications, the proportion of female corporate leaders is lower than in many other European countries. This indicates the managerial glass ceiling is not influenced by the same factors and policies as the general labor market but by factors specific to the managerial labor market.

A large literature in sociology, psychology and business studies has described the existence of widespread gender stereotypes with respect to leadership competences. The theory 'think manager – think male' states that important traits for a successful manager are mainly masculine traits while feminine traits are much less important for a successful leader. The 'think manager-think male' hypothesis has been tested and confirmed in numerous studies, see e.g. the survey by Koenig et al. (2011). There is, however, less evidence of the conjecture that not only are gender stereotypes seen as descriptions of managers but that they can also become prescriptive for managers' behaviors and career choices. Thus, stereotype attitudes may impact the gender gap on both the demand and the supply side of the managerial labor market.

When gender stereotypes are prescriptive, they affect individuals' beliefs about not only the ability of others but also of their own. This influences their choices regarding education, employment and

labor market careers. With respect to the latter, recent studies have documented gender differences in accepting tasks with low promotability (Babcock et al (2017)), timing of the acceptance of early career job offers (Cortés et al (2023)), engagement in bargaining (Biasi and Sarsons (2022)), and self-promotion (Exley and Kessler (2022)). These are all decisions that may be driven by individuals' beliefs in own ability. Thus, if "think manager – think male" is a widespread stereotype among employees, it makes female employees less likely to pursue careers aiming for top management positions (Coffman et al (2021)).

Previous evidence on beliefs about own ability is scarce; notable exceptions are Coffman et al (2014) and Bordalo et al (2019). Most studies are based on laboratory experiments, and the focus is not on managerial competences nor is the evidence directly related to labor market settings. Thus, in Bordalo et al (2019) participants, randomly assigned to groups of two, answer multiple-choice questions in categories like art and literature, mathematics, sports and games, emotion recognition, business, movies, cooking, rock music, and video games. Beliefs of about own and partner's performance is elicited from a short survey after participants answered multiple-choice questions. While a virtue of laboratory experiments is that they allow the researcher to control for the conditions and to exogenously vary factors of interest, they are, however, also characterized by short durations (a typical session lasts one to two hours) and mostly by rather low stakes. Another potential weakness contributing to reduced external validity is the fact that the student subjects are likely to differ from managerial employees who make up a highly selected group and have been shown by Adams and Funk (2012) to differ markedly from other employees regarding e.g. economic preferences.

This paper differs from earlier studies of (both managerial gender stereotypes and) managers' beliefs about their own managerial ability in two ways. Data is collected from internet-based surveys in which respondents are actual managers enabling us to analyze and describe beliefs about own managerial abilities and stereotypes. More specifically, 3,633 managers from a panel of two waves of around 2,700 Danish private sector firms have been asked about their beliefs about own managerial abilities for ten traits reflecting competences for a successful leader. The focus of the paper is on the managerial employees' beliefs about their own abilities and whether and how these beliefs are correlated with the managers' gender stereotype attitudes, career aspirations and perceived lack of fit

in the organization in which they are employed.[1] In addition, some evidence of the relation between beliefs in own ability and workplace characteristics is provided.

Based on the mapping of beliefs and stereotypes among the managers, we test whether female (male) managers who have more stereotype views on the role as a successful leader also tend to have higher beliefs about their own abilities for feminine (masculine) traits and less strong beliefs in their own ability regarding masculine (feminine) traits. Further, we map these gender differences among managers at different management levels in the company, ranging from lower-level managers to CEOs. The data allows us to relate the observed gender gaps in beliefs and stereotypes to managerial employees' career aspirations and perceived lack-of-fit in the organization they are currently employed at.

We find that female managers tend to rate themselves with respect to their own managerial ability higher than their male peers on the more feminine traits while the opposite is observed for the masculine traits. Notably, female CEOs differ from the female managers at levels below CEO by rating themselves high on both masculine and female traits. Gender stereotypes are strongly correlated with beliefs in own managerial abilities: Stronger (weaker) gender stereotype attitudes are associated with stronger beliefs in own masculine (feminine) abilities. Contrary to expectations, this pattern is the same for male and female managers. However, as male managers have on average stronger gender stereotypes this implies that male managers also have stronger beliefs in self. The results indicate that the "miscalculation component" in beliefs in own ability is larger for men except for the C-suite where there is no gender difference. Whether this is due to gender differences in overconfidence or other factors cannot be shown in a convincing manner with the data at hand.

We study a number of features of the environment in which managers' beliefs are formed. More specifically, whether they are influenced by their firms being female-led, female-dominated (in management) and family-friendly. We find evidence of the two latter contexts affecting managers' beliefs.

A significant positive relation is found between being career-oriented and having strong beliefs in one's own masculine traits. This is the case for managers of both genders. However, for female

[1] An earlier paper by Smith et al. (2021) used data from the first wave of the survey also used in this study. The focus in Smith et al (2021) was on the prevalence of gender stereotype attitudes among managerial employees and how these differ with respect to gender, age, tenure in firm, managerial job level, and whether the firm is female led.

managers, high scores on feminine traits are also positively (albeit not always significantly) related to career preferences. The results with respect to the relation between beliefs in own managerial abilities and a measure of role congruity within the company employed at are less clear.

The core contribution of this paper is that it looks at the supply side of the gender gap in top management positions by focusing on the role and impact of managers' beliefs in own managerial abilities. Some of the findings are not entirely new. They have, however, earlier been arrived at for non-managerial employees and mostly in lab experiments while we provide evidence from a fairly large data set on actual managers. Thus, we find confirming evidence of gender differences in beliefs in own managerial ability and that these are correlated with managers' own gender stereotype attitudes. Moreover, we study whether the impact differs by gender. Access to data on actual managers allows us to address issues that are not possible to examine in the lab, such as how beliefs in own ability differ across different levels in the corporate hierarchy. The paper contributes to the small evidence of context factors affecting managers' beliefs in their own abilities. Another novel contribution is that we look at how differences in beliefs in own management skills are associated with differences in managers' career identities and perceived role-congruity in the companies they are employed in.

The structure of the paper is as follows. Next section highlights relevant aspects of the literature on gender stereotypes and beliefs about own ability and discusses how these concepts relate to existing economic models on statistical discrimination, preferences, and identity. Section 3 describes the data sources used, and Section 4 details the measurement of stereotypes and beliefs about own ability. Sections 5 and 6 describe how beliefs about own abilities and stereotypes with respect to the role as a successful manager vary among managers at different levels in the company and examine how beliefs in own managerial ability are influenced by the manager's gender stereotypes. In Section 7, the beliefs about ability as managers are related to questions about role incongruity and career orientation. Finally, Section 8 contains a discussion of the results and concludes.

1. Earlier research and hypotheses to be tested

In many economic papers explaining the gender gap in promotions or top management position, one of the key parameters is beliefs about men's and women's home or market productivity, effort, ambitions or other characteristics which are typically not observed by the researcher but crucial when

hiring decisions are made. In the original theories of statistical discrimination, Phelps (1972) and Arrow (1973) formulated models where decision-makers face imperfect information and group specific membership provides additional valuable information about individuals' expected productivity. This type of belief generating behavior is based on rational expectations and has been used in later models explaining statistical discrimination and the resulting gender gap in promotions and earnings; see for instance Lazear and Rosen (1990), Fryer (2007), Bjerk (2008), Bohren et al. (2019). Beliefs are considered consistent in these models.

2.1 Earlier research about belief about own ability and gender stereotypes

If beliefs relate to competences, which are group specific (for instance STEM competences where men are typically dominating women) the formation of beliefs about oneself and others may be subject to distortions. Bordalo et al. (2016) explain stereotyping behavior as a result of the use of heuristics in probability judgements following the ideas in Kahneman and Tversky (1972). Stereotypes are "intuitive generalizations that individuals routinely use in their everyday life, and they entail savings on cognitive resources", Bordalo et al. (2016, p. 1755).

Gender stereotypes have been analyzed by social psychologists in relation to leadership positions and the conflicting roles for women in leadership roles, sometimes called the role incongruent theory, Eagly and Karau (2002), or lack-of-fit theory, Heilman (1983). According to these theories, prejudice towards female leaders can takes two forms. First, women are less favorably evaluated than men with regard to their potential for leadership because leadership ability is typically considered a masculine trait. Second, women's actual leadership is less favorably evaluated because more agentic leadership behavior is thought of as less desirable in women than men; see Eagly and Karau (2002). In this way, descriptive stereotypes may become prescriptive for leadership behaviors; Eagly and Karau (2001), Heilman (2001), Correll (2004), and Bertrand (2020). To be accepted as individuals, female managers may have to behave differently (be less agentic and more caring) than male managers because of their gender. This is likely to affect women's beliefs in their own ability as managers.

Female top executives may differ from other female managers for a number of reasons. Firstly, female C-suite members is a highly selected group of female managers who, despite difficult odds, have made it to the top. Due to selection, they may simply be more competitive, more decisive, and more masculine in their behavior and their norms regarding the role as a successful manager. Secondly, they may have changed their norms and values during the career in order to survive in a male

dominated environment. Thus, over their careers they may have become more gender stereotyping which in turn influences their belief in own ability. Adams and Funk (2012) provide evidence that female CEOs in Sweden scored much higher on the more masculine traits, compared to other women in the Swedish population. Smith et al. (2021) also found for Denmark that female CEOs tend to be more gender stereotyping than other female managers.

Bordalo et al. (2019) develop a model where belief formation is a process where two forces are at work and affect the beliefs about own as well as others' competences. Firstly, beliefs about own ability in a given domain depend on the stereotypes related to this domain (such as "boys are good at Math"), and secondly, beliefs are affected by the difficulty of a given domain because individuals tend to overestimate performance in more difficult domains. Results from laboratory experiments in Bordalo et al. (2019) show that the male advantage in a given domain significantly distorts women's beliefs about their own ability in the same domain.[2] For men, the estimated distortion effects are smaller. Bordalo et al. (2019) conjecture that distortion effects are larger when gender is more "top of mind".[3] Moreover, context is also important. Female subjects paired with women are more optimistic regarding their own competences than subjects paired with men and the effect is larger as the male advantage increases.

This behavior may also prevent potential female managers from promotions to higher positions because they may not signal that they possess the traits which successful leaders are expected to have. In addition, these mechanisms may produce double standards for evaluating male and female potential leaders. If the job as (top) manager is considered by the organization to be requiring agentic or masculine traits, and at the same time, there are prescriptive norms about how men and women should behave, this implies that women who signal masculine traits are evaluated less favorably as compared to male peers who signal exactly the same traits. These women may be seen as 'queen bees' or 'dragon ladies', i.e. women with unfavorable personal characteristics and may not, despite having all the competences necessary for (male) successful managers, be considered for promotions to top management positions; Eagly and Karau (2002).

Consequently, the existence of descriptive stereotypes as well as prescriptive self-stereotypes may offer an important explanation of why women still seem to have difficulties in climbing the career

[2]Related explanations emphasize gender differences in self-confidence and willingness to take risks; see e.g., Croson and Gneezy (2009), Azmat and Petrongolo (2014).
[3] In a firm, this corresponds to equaling 'manager' with 'male' at higher levels of the corporate hierarchy.

ladder to the same extent and at the same speed as their male peers, Coffman et al. (2019). If skills as a 'successful manager' are considered mainly to be 'male skills', gender-stereotyping women may shy away from competing for promotions to top positions. The important thing to note is that the reason is not necessarily only gender differences in tastes for competition (Niederle and Vesterlund, 2007) but it may also reflect gender differences in 'willingness to contribute as managers' because the traits associated with being a successful manager are considered masculine-typed. Thus, gender stereotypes about the managerial role may not only be descriptive prejudices about the role as a successful (male) manager but may also become prescriptive and affect the behavior of potential female leaders. Alternatively, gender stereotypes about the role as a successful manager may impact the self-confidence and belief about own abilities as a manager. The results from lab experiments also indicate that the context may be important. For instance, female managers working in female dominated or female led companies may have higher beliefs in their own abilities in masculine traits as compared to women working in male-led companies or companies dominated by male workers.

2.2 Hypotheses

Based on the theoretical considerations from earlier research, we propose the following hypotheses concerning the gender gap in belief in own abilities:

> *H1a: The beliefs in own abilities as a manager have a gender specific pattern: Female managers have higher belief in own abilities for more feminine traits, and male managers have higher beliefs about own abilities for more masculine traits.*
>
> *H1b: Female C-suite members differ from other female managers. Compared to other female managers, female top executives have stronger beliefs in possessing masculine traits.*

An important question is whether gender stereotypes matter for beliefs about own abilities. Lab experiments have shown that gender stereotypes affect the beliefs about own abilities in a systematic way with respect to masculine and female traits, see Hyde (2005) and Bordalo et al. (2019). In these studies, it is concluded that stereotypes are not only descriptive, but they are also prescriptive, i.e. stereotypes affect how managers conceive of themselves, which traits they want to emphasize they possess, and which traits they think are important for other managers. Thus, stereotypes may contribute to exaggeration of gender differences in traits (Akerlof and Kranton (2000); Bertrand (2020)).

Consequently, if evidence from lab experiments can be carried over to managerial employees, our expectation is that the more stereotype views held (i.e. the larger the value of the stereotype measure), the more will female (male) managers tend to overestimate their own feminine (masculine) traits and underestimate their own masculine (feminine) traits.

> *H2: For male managers, beliefs in their own more masculine (feminine) traits are positively (negatively) correlated with their gender stereotype attitudes. For female managers, we expect the opposite pattern, i.e. beliefs in own feminine (masculine) traits are positively (negatively) correlated with their gender stereotype attitudes.*

Beliefs in own ability may not only be influenced by an individual's own stereotype attitudes, but also by the extent to which the individual miscalculates his or her abilities. Following Bordalo et al. (2019), we assume that individual *i*'s belief in own ability, henceforth denoted boa_i, consists of two additive components: the miscalculation of one's ability and a second factor that is determined by the individual's gender stereotypes regarding the abilities:

$$(1)\quad boa_i = misc(\text{alculation})_i + \beta\, st(\text{ereotype})_i$$

The miscalculation component can in turn be written as the sum of the individual's true ability and his/her overconfidence

$$(2)\quad boa_i = true(\text{ability})_i + over(\text{confidence})_i + \beta\, st_i$$

The literature on overconfidence typically documents that this behavior is stronger among males than females, especially for masculine traits; for CEOs, see Malmendier and Tate (2015). Consequently, if true ability is the same for individuals of both genders with similar observable traits, the miscalculation component will be larger for males than for females.[4]

Whether the influence of stereotype attitudes on beliefs in own ability differ by gender is hard to say as there are no strong arguments for why it would differ. However, if the impact is the same, and if the hypothesis that males have stronger gender stereotypes holds, this implies that beliefs in own ability is higher for men. Thus, we have the following hypotheses:

[4] It is worth noting that there are also studies, showing that both men and women are typically overconfident and moreover, that the gender difference in overconfidence does not differ from zero; see the meta-analysis in Bandiera et al. (2022).

H3a: The impact of gender stereotypes on beliefs in own managerial ability does not differ by gender.

H3b: The miscalculation component in beliefs of own managerial ability is stronger for male than for female managerial employees.

Part of the literature on the relationship between stereotypes, self-stereotypes and contexts (Bordalo et al (2016, 2019), has been concerned with policies to reduce prejudice and to change stereotypical attitudes; see Bertrand and Duflo (2017) for a short review. For firms, de-biasing treatments such as gender quotas, affirmative action, bias-blockers and work-life balance programs have been suggested as means to make employees less biased against female employees. These policies could also influence how minority employees conceive of themselves. An important de-biasing mechanism is the increased exposure of majority members to minority employees (e.g., a female CEO, more female managers) giving rise to workplaces with weaker norms that some jobs or tasks are more male.

Relatedly, it has been suggested that so called "role models", such as female top executives, are important as they can influence the attitudes and strengthen beliefs in own ability among minority group members. When there are more female managers in a workplace, this leads to more investment in female employees' management skills. Thus, de-biasing policies can bring about changes in what is expected of one's gender. Empirical evidence on these issues is, however, scarce (especially based on field data) and there is even less on managerial labor markets.

We propose the following hypothesis:

H4: Managers' beliefs in (a) own managerial skills, (b) own feminine (communal) skills, and (c) own masculine (agentic) skills are stronger in female dominated workplaces (i.e., with high share of female managers), female led workplaces (CEO is female), and in more family friendly workplaces.

As the earlier literature is rather silent on whether the increase in beliefs in own ability is due to increases in own feminine or masculine skills, or both, we take a more explorative approach and look at whether female dominated, female led workplaces and family friendly companies are associated stronger overall beliefs in own ability and the feminine and masculine components therein.

An important theoretical and empirical question is whether gender stereotypes and beliefs about own abilities have an impact on the behaviours and career choices of men and women and whether this is part of the explanation of the gender gap in careers observed in most countries. If individuals with more feminine and less agentic abilities or less strong beliefs about their own ability feel less fitting into companies dominated by more masculine values, this may have consequences for their beliefs in own abilities as a manager, their self-confidence and their career aspirations. As Correll (2004, p. 95) writes: "Individuals must believe they have the skills necessary for a given career in order to develop preferences for that career".

Lab experiments have shown that beliefs about own abilities matter for individuals' performance, see e.g. Niederle and Vesterlund (2007) and the survey in Niederle (2016). If there is a significant relationship between beliefs about own abilities and self-confidence and career ambitions found among managers, and further, if gender stereotypes are significantly related to beliefs about abilities, then this indicates a potential link between gender stereotypes and managerial employees' career choices. Beliefs in own abilities are likely to be affected by for instance family friendly policies in the firm or the number or share of same gender managerial employees in the firm; see Niederle (2016), Niederle, Segal and Vesterlund (2013) and Bertrand (2018).

Next, we look at how beliefs about own self influence managers' career expectations and how well they feel they are fitting into their workplaces. Beliefs about own feminine and masculine abilities also affect the identity of the manager, in the sense that if an individual does not feel that (s)he has what it takes to be a successful manager, then (s)he will express weaker career ambitions compared to managers who believe they have the relevant competences for a successful manager. Naturally, this impacts the manager's confidence in her/his chances of being promoted. Thus, we propose:

H5: Managers with strong beliefs about their masculine (feminine) abilities tend to have a stronger (weaker) career identity and to feel more (less) fitting into the organisation.

3. Data

The empirical analysis is based on data collected in cooperation with the organization Association of Danish Managers ('*Ledernes Hovedorganisation'*), which is an organization representing about 115,000 managers at different organizational levels in Danish private and public sector companies

and organizations. The Association regularly analyzes questions related to corporate governance and management issues based on surveys among their members. We use two waves of a survey carried out in 2014 and 2019, respectively. The main topics in the survey were the firms' use of different management practices and questions regarding the management form, style and practices of the organization in which the respondents are employed. The survey data are merged with register data from the database Experian, which provides us with additional information on firm characteristics and performance.

The internet-based survey was sent out to members of the Association of Danish Managers in May 2014 and May 2019, respectively by YouGov. The sampling strategy was to stop collecting data when around 4,000 responses were obtained in 2014. For the 2019 wave, the collection stopped after 3,000 responses had been obtained. In 2014, 3,737 members provided valid answers to the survey while in 2019, there were 2,816 valid observations. In this study, we focus exclusively on private sector companies and hence exclude respondents from public sector companies and organizations. This leaves us with 3,633 individuals representing 2,685 firms in total for both years, of which 493 firms are represented in both surveys. One third of the respondents are women, which is consistent with the overall female fraction of all private sector managerial employees in Denmark.

The managers can be divided into sub-categories (this information is provided by *Ledernes Hovedorganisation*). In the following we use four categories[5] that have in common the fact that they all are managers with subordinates: CEOs, CXOs, medium level and lower-level managers. The difference between the two last ones is that medium level managers have some subordinates who are also managers, whereas low level managers do not.

Table 1 contains sample statistics of the respondents' individual characteristics. The average age is 48 years, respondents have on average 27 years of work experience, 10.5 years of tenure in the current firm, thereof 6.4 years of tenure in their current position. Female managers are slightly younger and accordingly have fewer years of work experience and shorter firm tenure. On the other hand, a larger share of female managers has a higher level of formal education than their male peers. 2.7 (5.6) percent of female (male) respondents are CEOs and 4.4 percent of the females (7.2 percent of the males) belong to the category other top executives (other CXOs). These figures indicate that female CEOs, CFOs, etc. are overrepresented in our sample since there are only about 9 (16) percent females

[5] The two sub-categories excluded from the analyses in this paper are self-employed and managerial employees without personnel responsibilities.

among CEOs (other CXOs) in all companies in the private sector in Denmark (von Essen and Smith (2022)). Overall, for the above-mentioned observable characteristics the sample appears representative of private-sector firms' managerial employees.

The identification of the key concepts of beliefs and stereotypes with respect to managerial skills is different from the studies in Coffman (2014), Bordalo et al. (2019) and other studies, which are based on data from lab experiments with students as subjects. Since our respondents are actual managers employed in real firms and since it is important to have respondents from all levels in the organization, including busy CEOs and other top executives, it has not been possible to use the same design for data collection as used in the lab. Instead, the respondents were shown a list of ten traits (described in more detail below) and asked to answer the following two questions:

Q1: "*To which extent do you consider the following traits to be important for a successful manager*?"

Q2: "*To which extent do you yourself possess the following traits?*"

A similar approach as in Q1 has earlier been used in studies to identify gender stereotypes, see e.g. Schein (1973) and the survey in Gmür (2006). The bulk of the present survey is concerned with management practices, style and forms in the firm and the two questions were included at the end of the questionnaire. Respondents were not informed about the purpose of Q1 and Q2. By this procedure, we aimed at reducing the potential risk of respondents answering in a politically correct manner and to avoid attrition due to unwillingness to answer questions related to gender stereotyping.

The respondents were asked to rate each of the ten traits on a Likert scale from 1 to 5 (not merely choosing a given number of traits as in earlier studies), where 5 stands for 'important to a very high extent' and 1 for 'not at all important'. The ten traits to be graded were the following: Decisive, in self-control, willing to take risks, competitive, socially competent, dialogue-oriented, helpful, result-oriented, visionary, and innovative. These traits were selected to represent both masculine and feminine traits as well as more gender-neutral traits. The answers to Q1 may reflect two separate components: An "objective" (unbiased) evaluation of necessary traits for being a successful manager and a stereotype component of the managerial role where the respondent reveals his/her own stereotypes.

In Q2, the respondents are in the same way as in Q1 asked to rate their own ability for the same traits as on the list for Q1. The answer to Q2 may reflect: An "objective" (unbiased) evaluation of own

traits or abilities, a stereotype component plus a miscalculation component (over- or underestimation of own ability), see equation (2), above. Since our data is answers to survey questions by actual managers, we are not able to identify the different components in (2). Specifically, we do not have an objective measure of each respondent's 'ability' with respect to the ten traits. Instead, our ambition is to exploit the information from the two questions and to shed light on the variation of the gender gap in views about successful managers, beliefs in own ability, and gender stereotypes across the ten traits, ranging from the more feminine to the more masculine traits.

In order to rank the ten traits from the most feminine to the most masculine, a two-factor analysis based on the answers to Q1 was performed. The factor analysis ranking, shown in the Appendix, Table A-1, indicates, in line with other studies, that the most feminine traits are 'socially competent', 'dialogue oriented', and 'helpful' while at the other end 'being 'competitive', 'result oriented', and 'willing to take risks' are the most masculine traits. Based on the factor analysis we define gender-neutral traits as 'self-control', 'visionary', 'decisive', and 'innovative'.

4. Measures of gender stereotypes and belief in own ability

We construct an index to condense the information captured by the scores to the ten traits for successful managers in the answers to Q1 (*To which extent do you consider the following traits to be important for a successful manager*?). In the sociological, psychological, and business literature, alternative ways to construct a managerial gender stereotype index have been proposed; see Smith et al. (2021) for a short survey. The general idea in the gender stereotype measures literature is to quantify the extent to which the respondent considers masculine traits more valuable than the feminine traits for being a successful manager. Here, we construct a straightforward measure: For each respondent, we calculate the observed Likert average score for the 3 most masculine traits in Q1 (willing to take risks, result oriented, and competitive) and the average Likert score for the three most feminine traits (socially competent, dialogue oriented and helpful). Denote the three most feminine and masculine traits by subscripts *fem* and *mas*, respectively. The individual stereotype, st_i, score is computed as:

$$(3)\quad st_i = \left(\sum score(Q1)_{mas} - \sum score(Q1)_{fem} \right)/12$$

which is normalized by dividing by 12. A score equal to 0 stands for gender-neutrality, that is, the respondents give the masculine and feminine traits exactly the same average scores. If the respondent gives the 3 most masculine traits the score of 5 and the 3 most feminine traits the score of 1, then *st* = 1. Conversely, if the most masculine traits are given the score of 1 and the feminine traits a score of 5, then *st* = -1.

Measures for beliefs in own ability, denoted *boa*, are calculated from the answers to Q2 (*To which extent do you yourself possess the following traits?)*. We compute these as the averages for each of the ten traits, the three most feminine (masculine) traits, separately for male and female respondents and for the four job levels, respectively.

The average values of *st* for males and females at different levels in the organizational hierarchy are displayed in Table 2. We may note that on average, male managers tend to have more gender stereotype attitudes than female managers in line with results found studies for several countries; see Koenig et al. (2011), and the recent study for Denmark, Smith et al. (2021).

As can be seen from Table 2, with a notable exception, managers at higher levels have more gender stereotype attitudes than managers at lower levels. Managers at lower levels are significantly less stereotyping than managers at medium and higher levels. An interesting result is that female CEOs, but not male CEOs, are significantly more gender stereotyping than all other managers of same gender (significant at 5% level). For CXOs the opposite is observed.

As for the subgroups (job levels) it should be noted that the significance of these results may depend on sample sizes. In order to check the importance of number of observations in each sub-group, the last column in Table 2 shows values for Cohen's d[6], which confirm the results in the third column: the main gender differences in stereotypes are found at the top of the management hierarchy where female CEOs are more masculine gender stereotyping then their male peers while for other C-suite members below the CEO level, the opposite is observed.

The results in Table 2 do not inform us whether the gender gap in the stereotype measure is due to a gender gap in the valuation of feminine or masculine traits for successful managers. For example, when as in Table 2, female CEOs are more stereotyping, this could be because female CEOs value

[6] Cohen's d is calculated as $d = \frac{M_M - M_F}{s_w}$ where $s_w = \left(\frac{s_M^2 \times n_M + s_F^2 \times n_F}{n_M + n_F}\right)^{0.5}$, M_j is mean value in group j, and n_j is number of observations in group j.

masculine traits more positively than their male peers or because they value feminine traits more negatively than male CEOs do. In the Appendix, Tables A-3 and A-4, we describe the differences between men's and women's evaluation of masculine and feminine traits, respectively. For both we compute the average of the three most feminine (Table A-3) and three most masculine (Table A-4) traits and normalize the scores to lie in the [0,1]-interval. On average, women tend to rate feminine traits higher than men. For both genders, there are relatively small differences between job levels in how feminine traits are conceived of. On average, there is no difference between the genders with respect to how masculine traits are rated. However, there is a gender gap in some subgroups of managers. Notably, female CEOs' conception of the masculine traits is significantly higher than that of their male peers. Thus, female CEOs' stronger gender stereotyping attitudes we saw in Table 2 mainly reflects that they value masculine traits much higher than their male peers. They do not reflect that women undervalue feminine traits compared to their male peers. For other members of the C-suite, an opposite pattern is observed. Below the C-level, gender differences are small and mostly insignificant.

5. Gender gap in beliefs in own abilities

The first hypothesis to test is about the gender gap in beliefs about own abilities as a manager: *H1a: The beliefs in own abilities as a manager have a gender specific pattern: Female managers have stronger beliefs in own abilities for more feminine traits, and male managers have stronger beliefs about own abilities for more masculine traits.* H1a is tested by using the answers to Q2 (*To which extent do you yourself possess the following traits?)*. This gap may of course reflect gender gaps in overconfidence or miscalculation, stereotypes as well as true abilities, see equation (2), above. If we assume that true abilities for each trait are the same for men and women, an assumption, which of course can be questioned, the observed gender gap reflects miscalculation and (self-)stereotypes.

The identification of miscalculation (over- or underestimation) of own ability is much more complicated in a survey of actual managers as compared to lab experiment data on for instance Math competences, where students may perform different Math tasks during the experiment in order to get a measure of how difficult a given task is and how well they performed it. Thus, the gender gap in belief about own ability for the 10 traits is a combination of gender gap in miscalculation and gender gap in stereotypes, assuming that the true ability of male and female managers is the same for the ten traits.

The raw gender gap (male minus female) in answers to Q2 for the survey respondents, are illustrated in Figure 1 panel a, for the ten traits, ranked from the most feminine to the most masculine traits. When looking at all managers as a group, Figure 1, panel (a) shows that the gender gap in beliefs about own abilities varies across the ten traits in a systematic way. Women tend to have relatively stronger beliefs than their male colleagues in their own abilities regarding the more feminine traits (significantly negative gaps for socially competent and dialogue oriented), while male managers tend to have stronger beliefs than their female peers with respect to more masculine traits (significantly positive gaps for self-control, willingness to take risks, and competitiveness). The results in panel (a) may, however, be affected by differences in background characteristics, for instance age, tenure and level of job held. To control for these factors, we estimated regression models separately for each of the ten traits with controls for age, age squared, and tenure in current job, indicators for management level (CEO, other CXOs, medium level) and a year dummy. In addition, we enter a gender dummy. The estimated coefficients of this 'male-dummy' for the ten traits are shown in panel (b) and they look very similar to those in panel (a). Thus, the results are robust to controls for the inclusion of background characteristics.

Based on the results in Figure 1, we can confirm H1a about the gender gap in *boa*, i.e., we find that the beliefs in own abilities as a manager display a gender specific pattern: Female managers have stronger belief in own abilities for more feminine traits, while male managers rate their more masculine traits higher.[7]

In order to carry out a more systematic comparison of the structure of the gender gap in *boa* components across job levels, we estimate simple OLS regressions by gender for the ten traits on the main background characteristics of the managers (age, tenure, education, and job level). The coefficient estimates of the job level variables are given in Table 3.

The most interesting results are found for the female managers. Notably, female CEOs stand out as very different from other female managers with respect to their beliefs about own ability. They rate themselves significantly higher on masculine traits than the excluded group of managers at medium and low levels and consider themselves less helpful in comparison with female managers at lower levels. This result is in line with the evidence presented in Adams and Funk (2012). For male

[7] We have also checked whether this differs across job levels. In the Appendix, Figure A-1, panel (a) in Figure 1 is reproduced for the different managerial job levels. The figure documents a similar pattern across managerial job levels with small differences between job levels.

managers, the gap between top-level managers (CEOs, other CXOs) and low-level managers for the masculine traits is smaller than for female managers.

In the Appendix, Table A-2, we show the average beliefs in own ability for the three most feminine and masculine skills by age cohort and gender. We can observe only small changes over time. In particular, the differences between the cohort born before and after the women's lib in the seventies are minor and this holds for both within- and between gender comparisons.

Table 3 also contains information for testing H1b *"Compared to other female managers, female C-suite members differ from other female managers. Female top executives have stronger beliefs in possessing masculine traits".* Since the coefficients of the CEO indicator in the female regressions are significantly positive for eight out of ten traits, our findings lend some support to H1b. However, the result only holds for the relatively small number of female CEO-members of the C-suite, and not for the other top executives (CXOs) who do not rate themselves significantly differently for most of the traits from female managers at lower management levels.

One potential explanation of the positive coefficient for female CEOs may be the conflicting role that female top leaders face. They have to show agentic (masculine) traits but at the same time have to be considered 'kind' (socially competent) in order to be accepted by colleagues and get good evaluations (the double standard problem related to role incongruity prejudices), Eagly and Karau (2002) and Correll (2004). The results from Table 3, showing the gender gap in beliefs about own ability lends support to this explanation since female CEOs score themselves higher than their male peers on all traits, feminine as well as masculine, except for willingness to take risks.

6. Belief in own ability as a manager and gender stereotypes

The gender gap in managers' beliefs about own abilities may be closely related to their own view and stereotypes about their role as a successful manager, i.e. their answer to Q1 about the traits necessary for being a successful manager. This is stated in Hypothesis 2 *"For male managers, gender stereotypes about the role as a successful manager are positively correlated with their more masculine traits and negatively correlated with their feminine traits. For female managers, we expect the opposite pattern, i.e. more stereotype female managers exaggerate their feminine traits and underestimate their masculine traits".*

Turning next to Table 4 in which the dependent variable is the average score on belief in own ability for each of the ten traits and the regressions are run separately by gender. To save space, only estimates of the coefficient of the stereotype variable are reported. Recall, that the three most feminine traits are socially competent, dialogue oriented and helpful, whereas the three most masculine are competitive, result oriented and willing to take risks. We may observe a clear relation between the manager's gender stereotype attitude and belief about own abilities: The stronger gender stereotype attitudes held, the stronger (weaker) is the belief in own ability for the masculine (feminine) traits.

In accordance with our expectations and hypothesis H3a (*"The impact of gender stereotypes on beliefs in own managerial ability does not differ by gender")*, this pattern is found for both male and female managers. Significance tests (not shown here) reveal no significant differences between the male and female coefficients for the traits in Table 4 (however, see below).

Next, we test H3b ("*The miscalculation component in beliefs in own managerial ability is stronger for male than female managerial employees")* on the data from our survey by running simple regressions of the following form:

$$(4)\quad boa_i = \alpha_0 + \alpha_1 female_i + \beta_1 st_i + \beta_2 (st_i * female_i) + \Upsilon \boldsymbol{X}_i + \varepsilon_i$$

We estimate (4) separately for three job-level categories: the C-level (CEOs and CXOs), medium-level and lower-level managers. The first two terms ($\alpha_0 + \alpha_1 female$) is the miscalculation component which may differ by gender (α_0 is the component for males and $\alpha_0 + \alpha_1$ the component for females) and picks up unobserved differences in true ability and in overconfidence (see eq. (2)), and β, which also can differ by gender, captures the influence of individual i's gender stereotypes. $\boldsymbol{X}$ is a vector of personal attributes (age, education, and tenure) included as controls.

The estimates are displayed in Table 5. First, it can be noted that the estimates are more mixed than those in Table 4 regarding their support for hypothesis 3a. As we estimate (4) for different job levels it turns out C-level managers stand out as different. That is, for female top managers a given stereotype attitude has a stronger positive (weaker negative) impact on their belief in own masculine (feminine) abilities than it has for C-level males. This indicates female members of the C-suite adapt their beliefs about own managerial abilities to the "think manager – think male" notion to an even higher extent than their male peers.

Distinguishing between masculine and feminine abilities we may observe that for beliefs in feminine abilities the miscalculation component is larger for females than males for all three management levels. For masculine abilities this pattern is only observed for lower-level managers. Thus, there is partial support for hypothesis 3b. It should be noted, however, that unlike in lab experiments (as for example, Bordalo et al. (2019)), we cannot identify the overconfidence part of the miscalculation component as we have no information about managers' true abilities.

In the third column in Table 5 the dependent variable is the difference between that in columns (1) and (2), that is the difference in beliefs in own masculine and feminine abilities. This difference is larger (higher up in the corporate hierarchy and) the stronger the manager's gender stereotype attitudes and there is no difference between male and female managers in this respect. Controlling for stereotype attitudes, the miscalculation component is smaller for females than males at levels below the C-suite. Thus, once again we find that the female managers at the top levels of firms are markedly different from their female colleagues at levels below.

For testing Hypothesis 4 (*Managers' beliefs in (a) own managerial skills, (b) own feminine (communal) skills, and (c) own masculine (agentic) skills are stronger in female dominated workplaces (i.e., with high share of female managers), female led workplaces (CEO is female), and in more family friendly workplaces*.) we run two sets of regressions. Common for both is that we use three different dependent variables: (i) the average score of beliefs in the three most masculine , (ii) three most feminine traits both normalized to lie in the (0,1) interval and (iii) as a measure of overall belief in own managerial skills the difference between the average scores for masculine and feminine traits, normalized to lie in the [-1,1] interval. The controls are age, age squared, education, tenure in current firm and job levels. The key explanatory variables for testing the hypothesis are three dummy variables: *Female CEO in* firm assumes the value of 1 if firm has a female CEO, and 0 else. *Female majority* assumes the value of 1 if the majority of managers in the firm are females, 0 else. And *Family friendly* assumes the value of 1 if the firm to a high or very high degree is considered to be a family friendly workplace, 0 else. All three dummies are constructed from the respondents' answers to in the survey.

The reason why we run two sets of regressions is that we must exclude CEOs from the samples when we test for the impacts of having a female CEO. The other data set includes the CEOs, but the regressions exclude Female CEO as an explanatory variable. As it turned out that the gender of the CEO of the company is unrelated to managers' beliefs in own masculine and feminine traits, that is

there is no evidence in support of a role model effect, we present those estimates in Table A-4 in the Appendix and concentrate our discussion on the estimates in Table 6.

Here we find that managers employed in firms where most managers are female, have stronger beliefs in their feminine managerial traits. This can be observed for both female and male managers and the magnitude of the impact is slightly larger for men. The estimated impact on masculine managerial traits is virtually equal to zero for male managers while the effect is positive for female managers. In other words, female managers working in firms with majority of managers being women have stronger beliefs in their masculine managerial skills than those employed in companies where women constitute a minority of the managers. In fact, male managers' beliefs in their masculine managerial skills are not affected by any of the three context variables we examined.

Two words of caution. First, the magnitudes of the estimated impacts are relatively small. Second, female majority firms are likely to have also a female majority among non-managerial employees (and maybe also differ in other respects) and hence call for different management skills (typically of more feminine character?). This could explain why both male and female managers in these firms score higher on beliefs in feminine traits. However, it does not help in understanding why also female managers' beliefs in masculine skills are stronger in these firms (while those of male managers are unaffected). Family friendliness of companies seems to influence beliefs in feminine skills, that is, contribute to less "think manager – think male" thinking. The absence of a role model effect of the relatively few female CEOs indicates that their strong gender stereotype attitudes and beliefs in their agentic skills do not spill over to lower levels in the management hierarchy.

7. Does it matter? Career considerations and lack-of-fit in the company

A key question is whether the patterns described in the previous sections matter for the choices and behavior of male and female managers? In this section, we test hypothesis H5 about 'lack-of-fit' (role incongruity) within the company and beliefs about own masculine and feminine abilities: *H5: Managers with strong beliefs about their masculine (feminine) abilities tend to have a stronger (weaker) career identity and to feel more (less) fitting into the organisation.*

The survey includes two questions, which we use to test H5. The respondents were asked to choose one of the following alternatives how to respond to the statements (i) and (ii) below: disagree, partly disagree, neutral, partly agree, and agree.

(i) *Employees like me lack the competences necessary to be promoted in my current firm*

(ii) *My career is an important part of my identity*

For the construction of variables for role congruity we use statement (i) and for career orientation (ii) is used.

These two questions were answered by about 2,000 respondents in the 2019 survey (the questions were not included in the 2014 survey).[8] Since CEOs cannot be promoted further in the firm, they are excluded from the sample for statement (i). The distribution of responses is shown in Table 7. About half of the respondents do not have a lack-of-fit problem at their current employer. About one fourth of the respondents of both genders do not feel role congruity in their current position within the organisation. The distributions of answers differ very little (their equality cannot be rejected by a Chi square test at the one percent level). As for career orientation, 68 percent of the male respondents and even a higher share of women, 78 percent of the female respondents, answered that their career constitutes an important part of their identity.

Table 8 shows marginal effects estimates from logit regressions where the left-hand side is a binary variable equal to 1 if the respondent wholly or partly disagrees (agrees) with statement i (ii), and otherwise 0. The key explanatory variables, shown in the table, are the sum of the *boa* scores of the three most feminine or three most masculine traits.

In general, the variables representing the three scores for the three most masculine traits carry the most significant estimates, especially for being career oriented, thus supporting Hypothesis 5. This result is found for both male and female managers. However, contrary to Hypothesis 5, for female managers, neither the scores for feminine nor masculine traits are significant in the role congruity regressions whereas for male managers both attach positive and significant estimates. The precision of the estimates may be affected by the smaller number of observations of female managers, but the magnitudes of marginal effects are also smaller for female managers than for male managers.

Summing up, our results indicate a clear positive relation between career orientation and beliefs in own masculine traits. For female managers, feminine traits are also positively correlated with being career oriented. For women, the relation is stronger for perceived own masculine traits compared to

[8] As these questions refer more directly about the respondent him/herself than the other questions that focus on the firm, one concern is that a fraction of respondents would not answer them. This turned out not to be the case. In fact, only one male respondent did not answer them.

perceived feminine traits. The results for the role incongruity are less clear. Thus, the support for Hypothesis 5 is somewhat mixed.

8. Discussion and conclusion

The considerably lower proportion of females in managerial jobs and especially in top management positions implies that there is a potentially large untapped female managerial talent pool in most firms. This in turn means there can be a large, underutilized growth potential in the economy. In this paper we have examined the role of managers' beliefs in own ability as a contributing factor to the glass ceiling in the managerial labor market and how these beliefs differ by gender and the corporate environment in the organizations the managers are employed in.

Summing up, this is what we find. Gender stereotypes are on average stronger for male managers, save CEOs. Female CEOs hold more gender stereotype attitudes. Compared to their male peers, female managers rate themselves higher regarding their feminine (communal) skills while the opposite holds for beliefs in their masculine (agentic) skills. Again, female CEOs differ as they rate their masculine skills higher than male executives do. As male managers have stronger gender stereotype attitudes, this implies they (on average) have stronger beliefs in their own managerial ability. Moreover, male managers, save those at the C-level, have a larger miscalculation component in their beliefs, possibly due to higher overconfidence. Consequently, at medium and lower managerial job levels, which constitute the feeding line into top management positions, there are two sources of females´ weaker beliefs in own ability which contribute to fewer women in top management jobs.

The few females there are in top positions make up a small and highly selected group and this could be a reason for why no role model effect is observed. However, we do find that female dominated workplaces (majority of managers are women) and family friendly firms are associated with stronger beliefs in own managerial skills.

Consequences of female's lower beliefs in own managerial ability are that they feel that they lack the competences needed for advancement in the management hierarchy and that their career is less important for their identity as a person. We find some evidence of such effects.

A large part of the academic as well as public policy discussion on how to break the glass ceiling in managerial labor markets has been concerned with increasing the number and share of women in firms' board of directors. Thus, the European Union has adopted gender quotas for corporate boards (of publicly traded firms) as from mid-2026. The research of the impact of gender quotas in boards has, however, shown that they have had limited, if any, impact on the proportion of females in CEO or other senior management positions (Bertrand et al. (2019), Matsa and Miller (2025)).

So, if gender quotas for boards do not have significant trickle-down effects, what could? In particular, what could change the notion that the role of a successful manager is possessing masculine traits? Introducing gender quotas for senior executives and/or managerial talent pools at lower levels are examples of more targeted policies. Increasing the exposure to more female managers is likely to be a rather slow process and the impact could take time to materialize. The same is likely true for other debiasing treatments and work-life balance programs. They may change not only gender stereotypes but also strengthen female managers' beliefs in their managerial skills. However, norms typically change very slowly and as we document in this study (Table A-2), differences in beliefs in own ability between cohorts are small.

Since it is difficult for policymakers to directly influence gender norms and gender beliefs, one must think of broader measures that could affect gender stereotypes among both female and male leaders. For example, quotas for paternity leaves may be just as important as gender quotas for corporate boards, because paternity quotas could help to break down traditional the gender division of labor at home as well as unconscious beliefs of what characterizes successful managers.

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Table 1. Mean sample values, individual characteristics

	All	Women	Men
Age	48.0	46.9	48.5
Work experience, years	27.0	25.2	27.7
Tenure in current firm, years	10.5	10.0	10.7
Tenure in current position, years	6.4	5.8	6.6
Highest educational degree obtained:			
Primary, lower secondary, upper secondary.	0.074	0.079	0.072
Vocational training	0.248	0.179	0.274
Short higher education	0.214	0.195	0.221
Medium higher education	0.307	0.358	0.288
Long higher education. master or higher	0.137	0.172	0.123
Other	0.021	0.017	0.023
Management level:			
CEO	0.048	0.027	0.056
Other top executives (CXOs)	0.065	0.044	0.072
Manager, medium level	0.342	0.296	0.359
Manager, low level	0.545	0.633	0.513
Industry/sector:			
Manufacturing	0.308	0.238	0.334
Finance, insurance and other service	0.258	0.270	0.254
Other	0.434	0.492	0.412
Number of observations	3015	791	2224

Table 2. Average value of *st* (gender stereotype measure) by gender, job level and Cohen's d.

	Women	Men	Difference (Men-Women)	Cohen's d
All	0.033 (0.008)	0.077 (0.005)	0.044** (0.009)	0.177
CEOs	0.153 (0.042)	0.099 (0.018)	-0.054 (0.046)	-0.251
Other CXOs	0.022 (0.044)	0.150 (0.019)	0.128** (0,036)	0.524
Managers medium level	0.091 (0.016)	0.100 (0.009)	0.009 (0.019)	0.034
Managers low level	0.040 (0.011)	0.080 (0.007)	0.040** (0.013)	0.164

** $p < 0.05$, * $p < 0.10$.
Absolute standards errors in parenthesis.

Table 3. OLS regression: Belief about own abilities as a manager, by management level, gender and each managerial trait (Q2 questions)

	Social-ly compe-tent	Dia-logue orient-ted	Helpful	Self-control	Visionary	Deci-sive	Inno-vative	Willing to take risk	Result oriented	Competitive
Management level[1)]					Female managers					
CEO	0.150	0.120	-0.361	0.170	-0.067	0.546*	0.183	0.713*	0.629*	1.541***
	(0.350)	(0.321)	(0.307)	(0.334)	(0.369)	(0.306)	(0.377)	(0.382)	(0.324)	(0.431)
Other CXO	0.153	0.179	-0.406**	-0.669***	0.175	0.372**	-0.114	0.353	0.100	0.417
	(0.203)	(0.190)	(0.181)	(0.197)	(0.218)	(0.181)	(0.223)	(0.225)	(0.191)	(0.254)
Manager Medium Level	-0.002	0.089	-0.154**	-0.093	0.002	0.111	-0.041	0.089	0.231***	0.274***
	(0.078)	(0.071)	(0.069)	(0.075)	(0.083)	(0.068)	(0.085)	(0.085)	(0.073)	(0.096)
					Male managers					
CEO	0.229*	0.127	-0.157	-0.289**	0.183	0.139	0.047	0.114	0.215**	0.178
	(0.127)	(0.120)	(0.112)	(0.115)	(0.124)	(0.104)	(0.128)	(0.128)	(0.109)	(0.136)
Other CXO	0.034	-0.021	-0.164	0.151	0.349***	0.257**	0.238*	0.323***	0.382***	0.271**
	(0.123)	(0.116)	(0.109)	(0.111)	(0.120)	(0.101)	(0.124)	(0.124)	(0.106)	(0.132)
Manager Medium Level	0.076	0.078*	-0.093**	0.074*	0.053	0.121***	-0.030	0.186***	0.202***	0.186***
	(0.049)	(0.046)	(0.043)	(0.044)	(0.048)	(0.040)	(0.049)	(0.049)	(0.042)	(0.052)

Note 1: Excluded category: lower level managers. Controls: age, age squared, tenure in firm, education, and 2019 dummy.
$^{***}p < 0.01$ $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 4. The coefficient of the stereotype measure (*st*) in regressions for belief about own abilities as a manager (Q2 questions). Separate OLS regressions for each managerial trait and gender

	Dependent variable: Belief about own abilities as a manager									
	Socially competent	Dialogue oriented	Helpful	Self control	Visionary	Decisive	Inno-vative	Willing to take risk	Result oriented	Competitive
All Men	-1.37***	-1.58***	-1.32***	-0.45***	0.22	0.29**	-0.08	1.24***	0.94***	1.76***
	(0.15)	(0.15)	(0.14)	(0.15)	(0.16)	(0.13)	(0.16)	(0.16)	(0.14)	(0.17)
All Women	-1.13***	-0.98***	-1.27***	0.43*	0.72**	0.63***	0.39	1.62***	1.37***	2.14***
	(0.26)	(0.24)	(0.23)	(0.26)	(0.28)	(0.23)	(0.29)	(0.28)	(0.24)	(0.32)

Note: Control variables are age, age squared, education, tenure in firm, managerial level. Separate regressions for all men (2633 observations) and all women (1000 observations).

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 5. Coefficients from OLS regression of eq. (4). Dependent variable: *boa* variables (Q2 question).

	(1) boa in 3 most masculine abilities	(2) boa in 3 most feminine abilities	(3) Difference in belief in masculine and feminine abilities
Panel A. C-level managers			
α_0 (males)	0.795***	0.761***	0.033
	(0.069)	(0.062)	(0.082)
α_1 females	0.020	0.058**	-0.039
	(0.031)	(0.028)	(0.037)
β_1 *st*	0.179***	-0.418***	0.597***
	(0.056)	(0.050)	(0.067)
β_2 (*st* * female)	0.251*	0.287**	-0.003
	(0.145)	(0.133)	(0.176)
Number of obs.	182	182	182
R^2 (adj.)	0.081	0.278	0.347
Panel B. Medium level managers			
	(1) boa in 3 most masculine abilities	(2) boa in 3 most feminine abilities	(3) Difference in belief in masculine and feminine abilities
α_0 (males)	0.838***	0.831***	0.007
	(0.033)	(0.031)	(0.038)
α_1 females	-0.009	0.036***	-0.045**
	(0.014)	(0.013)	(0.016)
β_1 *st*	0.297***	-0.207***	0.502***
	(0.035)	(0.033)	(0.041)
β_2 (*st* * female)	0.020	0.014	0.009
	(0.071)	(0.066)	(0.083)
Number of obs.	500	500	500
R^2 (adj.)	0.170	0.099	0.302

	Panel C. Lower-level managers		
	(1) boa in 3 most masculine abilities	(2) boa in 3 most feminine abilities	(3) Difference in belief in masculine and feminine abilities
α_0 (males)	0.793***	0.808***	-0.014
	(0.026)	(0.023)	(0.028)
α_1 females	0.028**	0.050***	-0.022*
	(0.012)	(0.011)	(0.013)
β_1 *st*	0.247***	-0.205***	0.453***
	(0.031)	(0.028)	(0.033)
β_2 (*st* * female)	0.136**	0.036	0.099
	(0.057)	(0.051)	(0.061)
Number of obs.	780	780	780
R^2 (adj.)	0.137	0.122	0.298

Table 6. Beliefs in own ability (boa) and female dominated and family friendly firms

	Feminine skills			Masculine skills		
	All	Women	Men	All	Women	Men
Female	0.036***			-0.018***		
	(0.006)			(0.007)		
Female majority	0.025***	0.022**	0.029**	0.016**	0.027**	0.004
	(0.008)	(0.010)	(0.012)	(0.009)	(0.013)	(0.013)
Family friendly	0.021***	0.016	0.024***	0.002	0.005	0.001
	(0.005)	(0.009)	(0.006)	(0.006)	(0.012)	(0.007)
N of obs	1,906	572	1334	1,906	572	1,334
R^2 (adj.)	0.044	0.019	0.018	0.028	0.014	0.026

Note: Control variables are age, age squared, education, tenure in firm, managerial level.
*** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$

Table 7. Marginal distributions of answers to two questions about role incongruity and career orientation by gender.

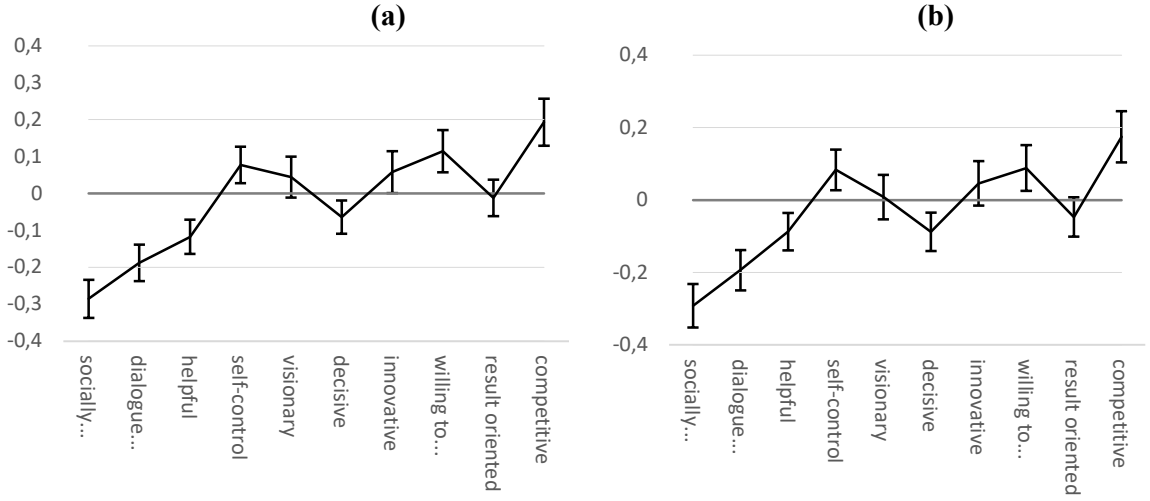
	(i) Role Incongruity		(ii) Career oriented	
	Men	Women	Men	Women
Disagree	0.33	0.34	0.05	0.03
Partly disagree	0.21	0.21	0.09	0.07
Neutral	0.22	0.19	0.17	0.12
Partly agree	0.17	0.18	0.37	0.40
Agree	0.06	0.09	0.31	0.38
All	1.00	1.00	1.00	1.00
N of observations	1,342	529	1,436	581

Table 8. Logit marginal effects estimates of role congruity and career orientation.

	Female Managers				Male Managers			
	(i) Disagrees that lack competences to be promoted		(ii) Agrees that career is important for my identity		(i) Disagrees that lack competences to be promoted		(ii) Agrees that career is important for my identity	
BOA: 3 most feminine	0.014	0.015	0.025**	0.023*	0.024**	0.022**	0.009	0.009
	(0.010)	(0.010)	(0.013)	(0.012)	(0.008)	(0.008)	(0.007)	(0.007)
BOA: 3 most masculine	0.008	0.002	0.057**	0.054**	0.018**	0.015*	0.045**	0.039**
	(0.040)	(0.013)	(0.024)	(0.025)	(0.008)	(0.008)	(0.020)	(0.017)
Controls for age, age^2, tenure in firm, management level	No	Yes	No	Yes	No	Yes	No	Yes
N of obs.	506	506	581	581	1,197	1,197	1,436	1,436

* $p < 0.10$, ** $p < 0.05$

Figure 1. Gender gap in belief about own abilities as a manager (BOA). Q2 answers.
Panel a: Raw Gap. Panel b: Controls for background characteristics.



Note: Panel b shows the coefficient to a male dummy in an OLS regression of Q2 on the variables, age, age squared, tenure in firm, education dummies, and occupational dummies. 95% confidence intervals are indicated.

Appendix

Table A-1. Factor analysis based on answers to Q1

Variable	Factor 1 (Feminine items)	Factor 2 (Masculine items)	Rank
Decisive	0.346	0.435	6
Self-control	0.483	0.271	4
Willing to take risks	0.202	0.403	8
Helpful	0.551	0.148	3
Competitive	0.068	0.647	10
Result oriented	0.082	0.619	9
Socially competent	0.646	0.106	1
Dialogue oriented	0.645	0.159	2
Visionary	0.383	0.458	5
Innovative	0.337	0.449	7

Table A-2. Beliefs in three most feminine and masculine skills by gender and cohorts

Beliefs in 3 most:	Gender	Born before 1969	Born in 70s	Born in 80s or later
Feminine Skills	Female	0.865	0.875	0.884
	Male	0.834	0.838	0.832
Masculine Skills	Female	0.763	0.753	0.776
	Male	0.769	0.777	0.749

Table A-3. Average valuation of three most feminine managerial traits by gender and managerial job levels

	Women	Men	Difference: (Men-Women)	Cohen's d
All	0.843 (0.115)	0.815 (0.116)	-0.028**	-0.108
CEOs	0.827 (0.153)	0.823 (0.093)	-0.004	-0.205
Other CXOs	0.840 (0.130)	0.800 (0.119)	-0.040*	-0.238
Managers medium level	0.831 (0.114)	0.810 (0.119)	-0.021**	-0.166
Managers low level	0.841 (0.120)	0.816 (0.120)	-0.025**	-0.178

** $p < 0.05$, * $p < 0.10$

Table A-4. Average valuation of three most masculine managerial traits by gender and managerial job levels.

	Women	Men	Difference (Men-Women)	Cohen's d
All	0.769 (0.116)	0.772 (0.115)	0.003	-0.025
CEOs	0.835 (0.089)	0.761 (0.081)	-0.074**	-0.549
Other CXOs	0.778 (0.100)	0.811 (0.106)	0.033**	0.391
Managers medium level	0.792 (0.110)	0.780 (0.109)	-0.012*	-0.135
Managers low level	0.767 (0.118)	0.770 (0.116)	0.003	0.009

** $p < 0.05$, * $p < 0.10$

Table. A-5. Beliefs in own ability and female led, female dominated, and family friendly firms

	boa in 3 most masculine – *boa in* 3 most feminine			*boa in* 3 most feminine traits			*boa* in 3 most masculine traits		
	All	Women	Men	All	Women	Men	All	Women	Men
Female	-0.055***			0.036***			-0.019***		
	(0.008)			(0.006)			(0.007)		
Female CEO	0.001	0.013	-0.010	0.005	-0.008	0.017	0.006	0.005	0.007
	(0.014)	(0.020)	(0.019)	(0.010)	(0.014)	(0.013)	(0.011)	(0.018)	(0.015)
Female majority	-0.006	0.006	-0.022	0.023***	0.020*	0.025**	0.015	0.025*	0.003
	(0.011)	(0.015)	(0.017)	(0.008)	(0.011)	(0.012)	(0.009)	(0.014)	(0.014)
Family friendly	-0.021***	-0.013	-0.025***	0.022***	0.015	0.025**	0.001	0.003	-0.000
	(0.008)	(0.014)	(0.009)	(0.005)	(0.010)	(0.007)	(0.006)	(0.012)	(0.007)
N of obs	1,836	565	1,271	1,836	565	1,271	1,836	565	1,271
R^2 (adj.)	0.045	0.005	0.018	0.042	0.007	0.018	0.022	0.008	0.019

- Note, CEOs are excluded from the estimation samples
- Dependent variables: feminine = sum of score for 3 most feminine traits normalized to lie between 0 and 1; masculine = sum of score for 3 most masculine traits normalized to lie between 0 and 1; boa = masculine -feminine (lies between -1 and 1)
- Controls: age, age squared, education, tenure in firm and managerial job level

Figure A-1. Gender gap in belief about own abilities as a manager. Q2 answers – no controls for background characteristics. 95% confidence intervals

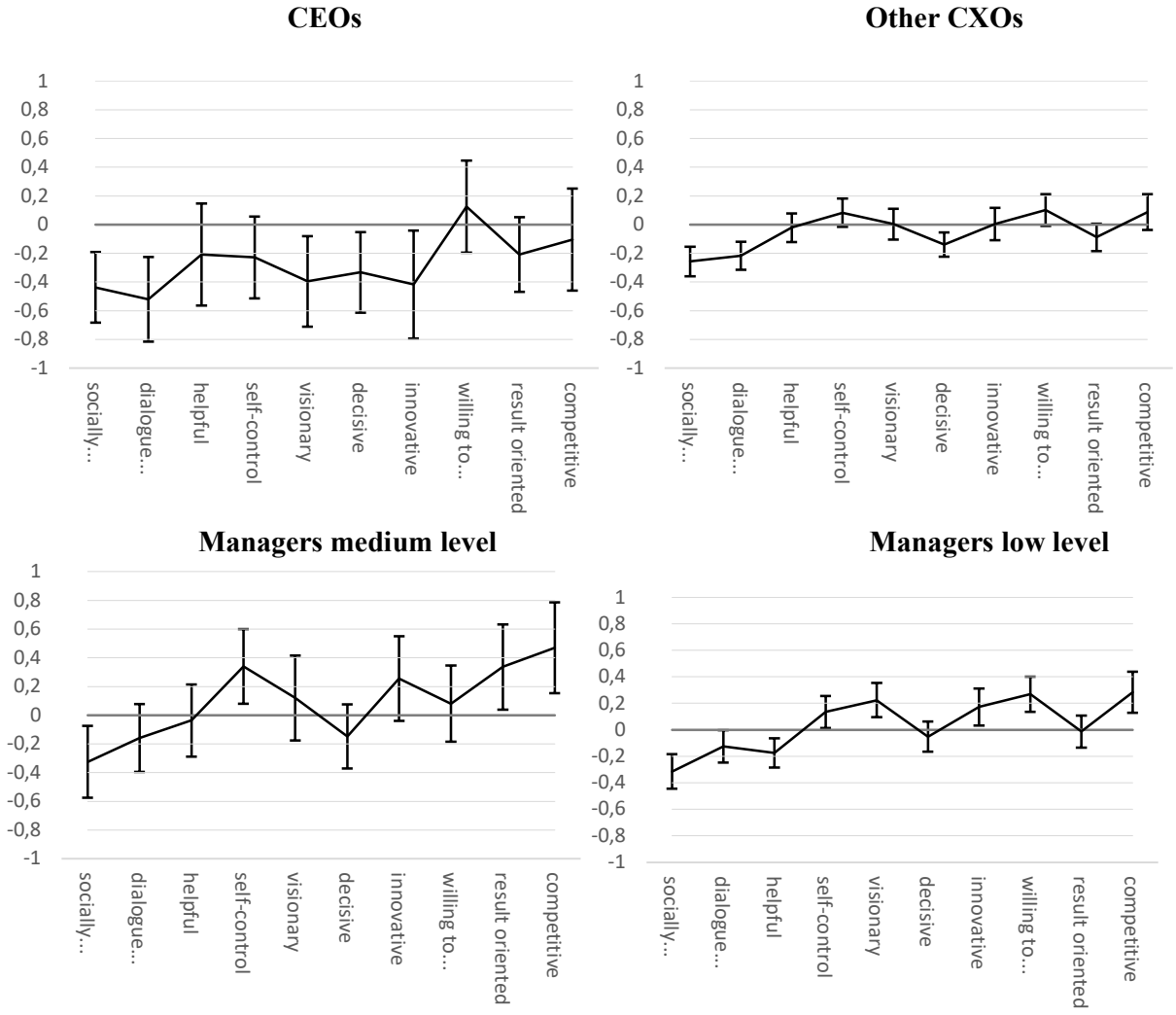


Figure A-2. Gender gap (Male – Female) in how important different traits are for a successful manager. Q1 answers. No control for background characteristics. 95% confidence indication.