



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Gender diversity on US corporate boards

Citation for published version:

Tinsley, C, Wade, J, Main, B & O'Reilly, C 2017, 'Gender diversity on US corporate boards: Are we running in place?', *Industrial and Labor Relations Review*, vol. 70, no. 1. <https://doi.org/10.1177/0019793916668356>

Digital Object Identifier (DOI):

[10.1177/0019793916668356](https://doi.org/10.1177/0019793916668356)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Industrial and Labor Relations Review

Publisher Rights Statement:

(c) the Authors

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



Gender Diversity on U.S. Corporate Boards: Are We Running In Place?

Catherine H. Tinsley*, James Wade**, Brian G. M. Main*** and Charles A. O'Reilly****

Abstract

Despite rhetoric supporting the advancement of women on corporate boards, there is meager evidence of significant progress over the last decade in the U.S. We use archival board data (for more than 3000 U.S. publicly traded firms) from 2002-2011 to show that a female is most likely to be appointed to a corporate board when a woman leaves. There is a similar propensity to reappoint a male when a man leaves, although the effect is smaller than for women. This “gender matching heuristic” can impede progress in attaining gender diversity, regardless of intention, because it emphasizes replacement of existing women rather than changing board composition. We replicate this effect in follow up lab studies, and show that “what works” to increase the representation of women on boards, irrespective of gender matching, is to increase the number of women in the candidate pool.

Keywords: Gender, Corporate Boards, Selection, Decision Heuristic

* McDonough School of Business, Georgetown University

** School of Business, George Washington University

*** Edinburgh University Business School, University of Edinburgh

**** Graduate School of Business, Stanford University

INTRODUCTION

Across the globe, corporations are under pressure to increase the number of women on their Boards of Directors. In the U.S., although women comprise roughly 47 percent of the labor force and 51 percent of the management and professional occupations (Bureau of Labor Statistics, 2013), women hold only about 17 percent of corporate board seats (Catalyst, 2014). Many actors in government, academia, and in organizations themselves are pushing for more gender parity on corporate boards (e.g., Bilimoria, 1995; Daily and Dalton, 2003; Valenti, 2007; Westphal and Milton, 2000). For example, in 2009, the Securities and Exchange Commission ruled that publicly traded companies must disclose whether and how they consider diversity when selecting directors. Three years later, a survey of more than 2,500 directors of U.S.-based publicly traded companies showed that 75 percent of respondents' firms had instituted diversity policies (ranging from having a general statement supporting diversity to proactively including boardroom diversity as a meeting agenda topic to having specific criteria and attributes for the board as a whole). Moreover, an overwhelming majority of the respondents (80 percent) believed that diversity in the boardroom created shareholder value (Spencer Stuart, 2012).

Given that many espouse the advantages of board diversity and yet diversity remains low, an important question seems to be *how* best to increase the percentage of women on corporate boards. Companies have begun to rely on policies such as requiring a diverse slate of candidates for every open board seat, having the CEO identify diverse candidates from within the company, and asking search firms to include diverse external candidates (Aguilar, 2010). Our research examines whether these methods will be sufficient to produce gender equality within a reasonable time frame. Our results suggest that current efforts towards gender parity may falter,

even when people have positive attitudes towards diversity, because of a “gender matching heuristic.” Gender matching in this context is the propensity to match the gender of the incoming candidate to that of the departing board member. Owing to this gender matching heuristic, the percentage of women on the boards of U.S. companies is likely to remain virtually constant and not increase meaningfully over time¹.

Moreover, we show that this gender matching process is largely under-reported by people when they are selecting candidates. When respondents are asked to articulate why they select a particular candidate, they offer reasons other than candidate gender (such as prior board experience and the number of other boards on which the candidate sits). Results show that when controlling for these other factors, gender matching still plays a significant role in their selection process. Given the gender matching process may be underestimated, finding policy measures that work presents a challenge. We test two interventions that might encourage a female candidate to be selected, regardless of the gender of the departing board member. We find that priming the urgency of selecting a woman by both reminding participants of the importance of diversity and creating a highly non-diverse board does little to increase the probability that a female candidate will be chosen. “What works” for increasing the overall selection probability of a female candidate is to construct a candidate pool where the number of female candidates outnumbered the number of male candidates. Yet, even with this intervention, a significant gender matching effect remains.

Our results suggest that the slow pace at which women’s participation on boards is increasing stems, in part, from a largely underestimated heuristic that guides people’s decisions

¹ Such a situation can be quite stable over time and need not result in any radical departure from the status quo gender distribution on the board. A simple Markov Chain illustration of this point is available from the authors upon request.

towards using the gender of the departing director as a cue to the appropriate choice of a replacement. In this study we contribute to the literature on board diversity by showing that valuing diversity may not be sufficient to increase boardroom gender diversity. We also add to the literature on gender by documenting a new heuristic that explains significant variance in how top-level candidates are selected. Finally, our results have implications for research in decision-making by offering evidence that the cognitive process underlying these selection judgments is consistent with the dual process model of cognition (Evans, 2008; 2010; Kahneman and Frederick, 2002; Sloman, 1996; Stanovich, 1999; Chaiken and Trope, 1999). As we explain in the discussion section, our results suggest that participants combine a deliberative cognition process using criteria such as candidate board experience with a gender matching heuristic that is largely an unconscious process. We conclude by discussing the implications of our findings for developing these literatures and for organizations and policy makers concerned with increasing female board representation.

THE GENDER MATCHING HEURISTIC

Organizational decision makers are bounded not only in their rationality, but also in the number of issues to which they can devote attention (Simon, 1991). Employee selection can be a particularly difficult decision problem because there are usually a large number of criteria on which various candidates can differ. Although the classic decision approach calls for a multi-attribute decision model in which candidates are selected by delineating the appropriate criteria, weighing their relative importance, judging how well each candidate fulfills each of the criteria, and combining these judgments to discover the best candidate (von Neumann and Morgenstern, 1944; Weber, 1985; Keeney and Raiffa, 1976), there is very little evidence that people actually select candidates in this manner (Schmidt and Hunter, 1998). Some lament that selection

processes are not more systematic, arguing that our “stubborn reliance” on factors such as intuition or gut feeling leads to a large number of poor selection decisions (Highhouse, 1997). Others advocate a more systematic approach using decision aids such as linear modeling (Meehl, 1954; Dawes, 1971; 1979).

Despite the evidence that these multi-attribute models outperform experts’ intuition (Dawes, 1971), people tend to reject prescriptions such as linear modeling. Instead professionals who select personnel for a living (such as HR managers and executive head-hunters) tend to believe they obtain better outcomes by making unaided decisions than by using such analytic tools (Colbert, Rynes, and Brown, 2005), and increased experience only heightens this conviction (Camerer and Johnson, 1991).

One reason that, in reality, unaided decision makers (even experts) perform more poorly than analytical models is because the complexity of the decision problem encourages reliance on decision rules or heuristics that reduce cognitive effort (Kahneman, Tversky, and Slovic, 1982; Tetlock, 2005). Experts rely on these heuristics even when they may not be immediately salient in conscious thought (Kahneman, 2003). Prior work suggests heuristics operate in the boardroom in matters of executive pay determination (e.g., O’Reilly, Main and Crystal, 1988; Shin, 2013), and it is clearly possible that they are also operating when it comes to director selection (e.g., Westphal and Zajac, 1995). One well-established phenomenon in the psychology of reasoning is a matching bias in the Wason (1966) selection task (Evans, Legrenzi, and Girotto, 1999). When asked to select the data they wish to view in order to affirm or refute a rule, people elect evidence by matching surface features between the rule and the targets rather than considering a deeper logic. For example, to affirm or refute the rule, *if someone is driving then he is wearing a seat-belt*, people elect to see drivers and seat-belt wearers, because these categories of people match

those stated in the rule. Yet, to test the rule, one needs to see drivers (to be sure they are wearing seat-belts) and those not wearing their seat-belts (to be sure they are not drivers). Because the surface features of people stated in the rule are what is salient, these features (drivers and seat-belt wearers) are matched to targets to select which candidates to review.

We believe this surface level matching can also occur when people are selecting board members to affirm a personnel principle, such as ensuring a qualified corporate board. We prefer the term gender matching *heuristic* over *bias* because, unlike in deductive logic tasks, in our selection task there is no one normatively correct answer to ensure a qualified corporate board or a well-functioning group. Our intent is simply to demonstrate that people take mental shortcuts when selecting personnel, and one such heuristic would be to match a surface level feature between a replacement candidate and the person being replaced. We argue here that gender is a salient cue that decision-makers rely on during the board selection process. In addition, we suggest that they are likely unaware of the strength with which this cue is influencing their judgment. Gender is arguably the most visible and essential social category (Prentice and Miller, 2007; Ridgeway & Smith-Lovin, 1999), and though it may activate a decision process this activation can be underestimated and lead to biased judgments (Correll, 2004; Ridgeway, 1997). Thus gender matching can be a decision heuristic but people may not be aware of the extent to which it is influencing their choices. Indeed, in a sample of about 300 Fortune 500 firms from 1990 to 1999 Farrell and Hersch (2005) show that when an individual leaves the board, their replacement is more likely to be of the same gender and that this effect is stronger when women leave the board. We extend their work by showing that this pattern continues to persist in this century (2002 to 2011) using a sample of ten times as many firms.

More importantly, in a series of experiments we show how largely underestimated this decision heuristic is and explore interventions that might attenuate it.

We argue that gender matching occurs because of two competing forces that impede progress towards change. On the one hand, companies and directors may care about promoting gender diversity either because they believe gender diverse groups make better decisions or because they believe such diversity is needed for firms to signal that they are conforming to the prevailing diversity norms in the larger environment (Meyer and Rowan, 1977; DiMaggio, and Powell, 1983). On the other hand, companies and directors may fear that any change can disrupt the cordial relations among board members (Krawiec, Conley, and Broome, 2013; Lorsch and MacIver, 1989; Westphal and Zajac, 1995). Thus, gender matching can be a safe way of attending to gender without committing too much effort. Decision makers can justify (either to themselves or to other stakeholders) that gender matters in their selection. Yet, what is underestimated is the degree to which they rely on gender-matching, and the implication of this for making progress in changing board composition. Although this matching heuristic may be at work with other demographic dimensions (such as age, ethnicity, and functional specialty) we focus here on gender because of its essential nature (Prentice and Miller, 2007) and, as noted above, because it is an important social category in current discourse about U.S. boards (Westphal and Milton, 2000; Westphal and Zajac, 1995). Gender matching in board selection occurs such that:

H1: Exits of female directors will have a positive impact on the probability of appointing a female board candidate, whereas exits of male directors will have a negative impact on the probability of appointing a female board member.

If gender matching is a heuristic, then people should underestimate its weight in their decision process (Kahneman, 2003). When asked to articulate the reasons for selecting a particular candidate, the importance of candidate gender, overall board gender, and gender matching should be less salient relative to other candidate criteria.

H2: When people are asked to judge the importance of a number of different decision criteria, they will declare gender as significantly less important than other criteria.

H3: When people are asked to explain the criteria that they used in selecting new board members and these conscious explanatory factors are included in analysis, the gender of the departing board member will continue to have a significant influence on the gender of the candidate selected.

INTERVENTIONS TO INCREASE FEMALE REPRESENTATION ON BOARDS

Staying with a current state can be good as long as previous decisions were good enough (Haselton and Nettle, 2006). However, in the context of board selection a lack of progress in changing board demographics might be costly to companies since there has been an increasing emphasis on the importance of gender representation. As a result, companies are under increasing normative pressure to demonstrate that they are making a good faith effort to increase diversity, even if such efforts are primarily symbolic (Meyer and Rowan, 1977). There is a substantial expectation that the board will serve a symbolic role by signaling to outsiders aspects of the organization that are unobservable owing to asymmetry of information (Connelly, Certo, Ireland & Reutzel, 2011; Miller and Triana, 2009; Westphal and Zajac, 2014). Conformance to changing norms of boardroom diversity may serve as a signal of good corporate governance (O'Reilly and Main, 2010; Rhode and Packel, 2010) even though the empirical evidence for the

impact of boardroom diversity on company performance remains mixed, with some studies finding statistically positive significant effects (Ben-Amar, Francoeur, Hafsi and Labelle, 2013; Carter, Simkins and Simpson, 2003; Jurkus, Park and Woodward, 2008), some finding no effects (Carter, D'Souza, Simkins and Simpson, 2010; Francoeur, Labelle and Sinclair-Desgagne, 2008; Gregory-Smith, Main and O'Reilly, 2014; Minichilli, Zattoni, Nielsen & Huse, 2012; Rose, 2007), and some finding negative effects (Adams and Ferreira, 2009; Ahern and Dittmar, 2012; Shrader, Blackburn and Iles, 1997; Triana, Miller & Trzebiatowski, 2014; Wellalage and Locke, 2013). However, in terms of organizational reputation (Fombrun and Shanley, 1990; Musteen, Datta and Kemmerer, 2010; Rindova, Williamson, Petkova and Sever, 2005) and norms of equal opportunity, the social expectation is that firms are expected to make efforts to increase the diversity of their boards.

Given that gender matching can be a mechanism by which people can attend to gender and not increase gender parity on corporate boards, we tested two mechanisms that might prompt participants to increase the overall number of female board members. In the first intervention, we make salient the urgency of selecting a female candidate by reminding participants how diverse perspectives can enhance the board's decisions and by presenting them with a highly imbalanced current board that has very few women. In the second intervention, we increased the number of women in the candidate pool to exceed that of men.

OVERVIEW OF STUDIES

Study 1 is an archival field study designed to test Hypothesis 1. Our data includes board representation of more than 3000 companies across a ten year period and tests whether, controlling for other factors, the propensity to appoint a woman as the next director is predicated

on a female rather than male director leaving. Studies 2 and 3 test Hypotheses 1-3 as well as interventions to decrease gender matching. We test for gender matching through the classic reversal test (e.g., Bostrom and Ord, 2006); that is, when a woman departs, a woman should be more likely to be selected than a man; when a man departs, a man should be more likely to be selected than a woman. Further, we test whether gender and gender matching are largely ignored by people as factors influencing their selection process and whether the gender matching effect persists after controlling for people's own espoused selection criteria.

STUDY 1 – ARCHIVAL FIELD STUDY

In Study 1 we test Hypothesis 1, namely that the exits of male directors will increase the probability that a male candidate will be selected and that the departure of female board members will increase the likelihood that a female board candidate will be selected. As noted earlier, Farrell and Hersch (2005) found this effect in their sample of about 300 Fortune 500 companies during the period 1990 to 1999. In this study, we examine gender matching using a more recent and comprehensive sample of more than 3000 companies over the ten-year period from 2002 to 2011.

Method

We use data obtained from Equilar on more than 3000 companies between 2002 and 2011. Equilar collects data on the entire Russell 3000, which represents about 98 percent of the U.S. equity market, as well as on many other companies that file a proxy with the SEC. We utilized fixed effects and random effects conditional logistic analyses to predict whether a newly appointed director was female or male. Thus, each observation represented the appointment of a new director that had not previously been on a focal company's board. Essentially we model the

probability that a female will be selected as a director given that the firm appoints a new director that year. If a firm appoints two directors in a given year that firm will contribute two observations to our analysis for that year.² We controlled for each firm's lagged one-year market return, size in assets, the number of directors on the board, and the percentage of women on the board. Our two key variables of interest were the number of females and males that exited the board. All independent variables were lagged by one year.

Analyses & Results

Table 1 shows the means and correlations of the variables in the study. Model 1 in Table 2 utilizes random effects clustered at the firm level. Firm size and the number of directors increase the chances of a woman being appointed while the percentage of females on the board the previous year decreases it. Consistent with the findings of Farrell and Hersch (2005) and Hypothesis 1, the probability of a woman being appointed rises when women left the board in the previous year. Similarly, while the effect is smaller in magnitude, women are less likely to be appointed as the number of men who exited the board the previous year increases. In Model 2, which uses a fixed effects estimator, the effect of a male leaving remains about the same as in the random effects model, but the coefficient on female exits increases sharply from .6911 to about 1.115.

(insert table 1 here)

(insert table 2 here)

² Our fixed effect conditional logistic approach is quite conservative because our effects will only be significant if changes within a firm are related to our dependent variable. Farrell and Hirsch (2005) took a different but complementary approach and used Poisson regression to predict the number of female and male directors appointed by a firm each year. We reran our analyses using this approach and our conclusions remain the same. These analyses are available from the authors upon request.

We investigated the strength of these effects by calculating the change in probabilities that would occur at the mean of the dependent variable when a male or female had left the previous year. On average 12.8 percent of new directors were women. In the random effects model (Model 1), if a male director exits the previous year it reduces the probability of choosing a female from 12.8 percent to about 10 percent. In contrast, if a female exits the previous year the chances of a female appointment increase from 12.8 percent to almost 23 percent. In the fixed effects model (Model 2), the change in probabilities associated with a male leaving the board do not appreciably change, but the likelihood of appointing a woman increases from the 12.8 percent cited above to almost 31 percent. Because the influence on board appointments of women of a female exit is greater than effect of a male exit, one might expect that the number of women directors would rise over time. However, this is counterbalanced by the preponderance of males on the board at the outset. The predominance of male directors inclines the process towards a self-perpetuating outcome. The more women on the board the better the chance they will further increase their representation, but these estimates suggest that it is a slow process, and not a gender-neutral one.

We also investigated whether this differential appointment rate might be narrowed as more women join a board. Possibly, their greater numbers might give them more power and influence and lead to more female appointments. Model 3, which adds an additional variable in the form of the square of the percentage of women on the board, shows some preliminary support for this idea in that the main effect is negative while the squared effect is positive. However, the inflection point at which an increased percentage of women would start to increase the likelihood of female appointments does not occur until the percentage of women reaches

about 87 percent, a percentage that is reached in only those companies well above the 99th percentile in the sample.

We repeated a similar analysis in which we used the number of female and male directors instead of the percentage of female directors. Model 4 shows that, as expected and consistent with the findings above, the exit of female directors increases the chance that the next board appointment will be a woman while the number of males exiting decreases it. It can also be seen here that the chances of a woman being appointed to the board are higher when there were more male board members, but that the negative effect associated with having more female board members is over six times larger. In Model 5, we add the squared effects for the number of male and female directors. Similar to our percentage measure, the number of women first reduces the chance of a female appointment but becomes weaker as more women are added. However, the inflection point at having another woman increasing the odds of appointing a woman occurs after seven women are on the board, which is outside the range in our sample. Interestingly, the positive impact of having more males on the board also fades over time although this effect is relatively weak.

Discussion

Overall, we find very strong support for gender matching. A new board appointment is more likely to be a female when a female board member has left than when a male board member has left. In a gender-neutral world, it might be expected that the gender of the appointee and the gender of the retiring member would be independent of each other. The exact probability of appointing a male or a female might depend on the gender mix of the qualified talent pool, but whatever the mix is, the chances of a woman being appointed should be the same irrespective of

the gender of the person stepping down. While the gender matching effect of females exiting the board is stronger than that for male exits, this is unlikely to lead to significantly more female representation on the board because as the number and percentage of women on the board increase, the chances of a female appointment decline. Even though this effect fades as more women are board members, the inflection point at which an additional female board member increases the appointment chances of female appointments is almost outside the sample range. Lack of much progress in increasing diversity is confirmed by Figure 1, which shows the percentage of female board representation from 2002 to 2011 for firms that were in our sample for the entire ten years. While the percentage of women on the board increases slightly over the period, the percentage of women remains quite low (well below 15 percent). In the following studies, we examine decision makers' selection process in greater depth.

LABORATORY STUDIES

Given the field evidence that exits of female directors prompted female appointments and exits of male directors had the opposite effect, we sought to explore why this effect occurred by replicating this situation in the lab. Specifically, we wanted to: 1) examine people's explanations for why they selected certain candidates, 2) test whether gender of the departing candidate is still significant when controlling for these explanations, and 3) test the relative importance of gender versus other criteria by having participants rank the importance of 12 salient attributes of the candidates and the board members.

Methodological Overview

Participants were asked to assume the role of the chair of a corporate board's nominating committee and were told that it was their job to select a replacement for a departing board

member (who was variously male, female, or no gender given). Participants were given information about the current nine member board in terms of member age (45-68), gender (three females and six males), functional area (varied), years of board experience (5-17), number of other board memberships (1-5), and the relative number of insiders (a corporate officer) versus outsiders. They were told that the company had hired a team of recruiters who had reviewed possible candidates and were going to present the participant with a slate of six candidates. See Appendix 1 for the exact text.

Participants then received six different resumes that had the following information about the candidate: name, title, company, age, years of board experience, and the number of other corporate boards on which she or he sat. Their names were either female (Ellen, Margaret, Sandra, or Karen) or male (John, Mark, William, or Robert). Their titles were either: Executive Vice President (EVP) of Operations, EVP of Marketing, EVP of Purchasing, EVP of Federal Relations, EVP of Distribution, or EVP of Sales (specifically chosen to denote functional area). The candidates' companies were respectively named Slidell Company, Larkspur Industries, Nelicore Inc., Krendle Inc., Halifax Corp., or Euclides Company (all fictitious). Candidate age was randomly varied between 45 and 68; years of board experience was randomly varied between five and 17; and the number of other corporate boards was randomly varied between one and five. Participants were tasked with selecting a candidate and then were asked to explain in their own words why they had chosen that candidate. After they responded, they were asked to rate the importance of various decision criteria, and finally to answer some attention filters and demographic questions. Their responses were all completed online.

Age, board experience, and the number of boards could all be assigned via a random number generator, but title and company name could not (unless we generated more titles and

companies) because the last one assigned would be constrained by the others previously chosen (if we specified sampling without replacement). We also thought participants might become suspicious if two or more candidates had either the same title or the same company (if we specified sampling with replacement). In order to avoid having to construct a 2 (gender of departing candidate) X 6 (order of resumes) X 6 (functional area) X 6 (company name) design, we ran a pre-test to check whether there were any effects for resume order, functional area, or company name. We found that there were no such effects and these results relieved us of the need to vary the order of the resumes in terms of functional area or company name. These pre-test results are available from the authors upon request.

Study 2: Testing gender matching

Design and Participants. In this study we varied the gender of the departing board member: male, female, or no gender information was given (the control group). The participants (N=232) were undergraduate business students at a large, private East Coast University who voluntarily participated in the exercise in exchange for course credit. Ours was one of a battery of exercises they completed during an hour session. They were 53 percent male and, on average, were 20 years old (s.d. = 2.0).

Procedure and Measures. After reading a short description of the study and clicking their consent, participants received the information in Appendix 1 about the task. They clicked on the next screen to receive the six resumes that described the demographics of the board candidates (see Appendix 2). They were presented with two female candidates and four male candidates. Again, the primary dependent variable was whether they chose a male or a female candidate. After selecting their choice, they described in their own words why they had selected that candidate. On the next screen they were asked to rate (on a five point Likert scale with 1 =

not at all to 5= very important) the importance of 12 criteria: the candidate's corporation, the candidate's functional expertise, the candidate's age, the candidate's gender, the candidate's years of board experience, the candidate's other board memberships, the mix of corporations on the board, the mix of functional areas on the board, the mix of ages on the board, the mix of genders on the board, the mix of years of board experience on the board, and the mix of number of other board memberships on the board. They then answered the attention filter, a manipulation check (gender of departing candidate) and provided demographic information.

Analyses and Results. Seventy percent of the participants passed the attention filter and were retained for the analyses (Male left N=50; Female left = N=63; control N=50). The manipulation was successful in that those who said a female left were mostly in the female exit condition (94 percent), those who said a male left were mostly in the male exit condition (56 percent), and those who said no gender information was given were mostly in the control condition (77 percent). We first tested Hypothesis 1 (that the gender of departing board member would match the gender of the selected candidate) with a chi-squared test. When there was no gender information on the departing candidate (control), 50 percent of participants selected a female candidate. When the departing board member was female, 68 percent of participants selected a female candidate; when the departing board member was male, 58 percent of participants selected a male. These differences are significant ($\chi^2_{(2)} = 8.55, p=.01$), supporting H1.

We coded participants' open-ended responses as to why they had selected a particular candidate by creating categories of the different attributes mentioned: age, gender, board experience, number of boards, or other (such as functional area). Participants could mention the attribute either in reference to the candidate (e.g., candidate's age), the board (the mix of ages),

or both. Because gender was our primary focus, we further parsed this category to code for whether participants mentioned gender diversity (“She is someone different from the majority, so she could bring a fresh perspective”), gender matching (“A male to replace a leaving male”), or some other gender-based reason (“She’s female” or “I wanted to choose a woman”). Responses were not mutually exclusive as many participants listed more than one reason (“He has a lot of experience and he has fewer other board obligations”). Two coders blind to conditions and hypotheses coded responses (Cohen’s kappa =.90).

Across all conditions 51 percent of responses mentioned board experience as a factor, followed by 31 percent mentioning number of other boards, 10 percent age, six percent mentioned gender diversity, five percent mentioned gender matching, 23 percent some other gender-based reason (“because she was a woman”), and 15 percent some other factor (usually functional area or something generic like “most qualified”). Female participants were more likely to mention gender diversity than male participants ($\chi^2_{(1)} = 4.22, p=.04$).

To test Hypothesis 2, which posited that when subjects were asked to explicitly judge the importance of a number of pre-defined decision criteria, they would rate gender as significantly less important than the other criteria, we looked at participants’ ratings of the 12 decision factors we provided. Descriptive statistics of these ratings are shown in Table 3. The candidate’s board experience, other board memberships, and the mix of years of board experience are the top three reasons. The candidate’s gender is ranked eighth out of 12 in importance, and the mix of gender is ranked seventh, both of which are significantly below the top three reasons. A t-test between the mix of board experience on the board (ranked third) and the mix of genders on the board showed that they were significantly different ($t_{(162)} = 4.40, p<.001$); a t-test between the mix of

board experience and gender again showed significant differences ($t_{(162)} = 5.15, p < .001$). These results support Hypothesis 2.

(insert table 3 here)

To test Hypothesis 3, namely that the gender of the departing board member will continue to exert an influence on candidate selection after controlling for the participants' stated reasons for their choice, we used logistic regression (Table 4). The dependent variable was whether a female candidate was chosen. We first entered participant demographics, then the randomly varied candidate attributes (e.g., average age, board experience, number of other boards of the current male and female board members), then participants' articulated reasons, and finally the study manipulation (the gender of departing candidate). To test whether the condition mattered we used Helmert contrasts because our treatment groups (male versus female departing) were nested within a larger question of whether having gender information at all differs from having no gender information (control). Following standard procedure (Judd and McClelland, 1989) the first contrast is control (=2) contrasted with having gender information of departing board member (Male departed=-1; Female departed =-1). The second contrast is female leaving (-1) versus male leaving (1) (where control = 0).

Results, shown in our completely specified model (Model 4) in Table 4, support Hypothesis 3. When controlling for participant demographics, candidate attributes, and participants' articulated rationale for their selection, gender information in and of itself had only a marginally a significant effect on whether a female candidate was chosen (Contrast 1). However, as expected by our gender matching hypothesis (Contrast 2), when a female board member departed rather than a male, a female candidate was significantly more likely to be

chosen. Interestingly, participants' own stated diversity-based or gender-matching explanations do not contribute significantly to the variance in selecting a female (after controlling for other variables).

(insert table 4 here)

Discussion. In this experiment, we successfully replicated the gender matching selection process found in the field data whereby a female was significantly more likely to be chosen than a male candidate if a female, rather than male, board member was departing. This occurred despite what might be a weak manipulation (recall that while the majority of respondents in each condition correctly identified their condition, only 56 percent of respondents in the male exit condition remembered that a male had left). Given this controlled environment, we were able to ask participants to articulate their rationale for selection and very few mentioned gender matching (five percent). Although female participants were more likely than male participants to consciously articulate a gender-based rationale for their choice (diversity), they were not more likely than males to mention gender matching. Most mentioned the candidate's prior board experience and other board memberships. Moreover, when these articulated reasons were controlled for, the departure of a female board member still significantly increased the probability that a female candidate would be selected providing support for gender matching. For most participants, this gender matching process is not articulated as a rationale. Yet, this heuristic gender matching helps explain why the rate of increase of female participation on boards is so low, despite the voluminous public discussions about the importance of increasing female representation.

One difference between this study and the field data was the participants' overall tendency to select a female candidate. In all conditions, students selected a female more often than in the field data and more than the base rate representation of female candidates (33 percent). For example, in the control condition, participants selected a female 50 percent of the time, a base-rate unlikely to occur in board selection committees. Yet, this overall shift in favor of selecting a female, does not threaten the validity of our results. Irrespective of the main effect, we still found evidence of gender matching, whereby a female was selected significantly more often when a female board member departed (68 percent) than when a male board member departed (42 percent). Moreover, the criteria that participants declared they used (such as board experience and other board memberships) were generally not related to their selection, whereas the gender of the departing board member was.

Study 3: Testing interventions

Design and Participants. To test the two interventions for increasing selection of a female member, we employed a 2 X 3 design where either a female or male was departing the board and either there was: 1- an urgency prime (importance of diversity and heavily imbalanced board); 2- an increase in the number of female candidates (four of six), or 3- no intervention (control). Participants (N=964) were recruited from Amazon's Mechanical Turk and paid \$0.50 for their responses. They were 57 percent male, 81 percent white, 51 percent had at least a college education, 44 percent made at least \$50,000. Their average age was 35.44 (s.d. =12.1) and they were 42 percent Democrat, 17 percent Republican, and 35 percent Independent.

Materials, Procedure, Measures. The materials were slightly altered from Study 2 to construct a more conservative test of whether or not participants might select new board

members based on gender matching. We gave more information about the departing director so that gender was not the only piece of information participants had about him or her, and we assigned each *departing director* a title (Chief Financial Officer), a company name (Acatel Industries), an age, years of board experience, and the number of other boards on which they serve (all of which were averages of the focal board).

We then created three conditions. For condition 1 (Urgency Prime) participants read:

“Because a diverse mix of people on a Board (who bring different skills and perspectives) is good for the company, you have asked the recruiting team to bring you a slate of six different candidates from which you can choose. Their resumes are summarized on the next screen.”

This text was created after consulting with a female who serves on three Fortune 1000 boards for the language she hears at board meetings on the importance of diversity. Participants were also told that the initial board had two females and seven males. For condition 2, participants were presented with a slate of four female candidates and two male candidates. Condition 3 was the control condition, meaning it was identical to Study 2 except for the aforementioned additional information about the departing director. The measures and procedure were identical to Study 2.

Analyses and Results. Seventy five percent of the participants passed the attention filter and were retained for the analyses (N=728). The manipulation was successful; in the male exit condition, 97 percent of the remaining participants correctly identified that a male had departed; in the female exit condition, 94 percent of participants correctly identified that a female had departed. Consistent with Hypothesis 1 (that the gender of departing board member will influence the gender of the selected candidate), the results showed that when a female departed,

80 percent of participants selected a female candidate, and when a male departed, that percentage dropped to only 63 ($\chi^2_{(1)} = 25.80, p=.001$).

To examine the extent to which gender is consciously articulated as a reason for candidate choice, we again looked at the reasons participants gave for their choices. Across all conditions 71 percent of responses mentioned board experience as a factor, followed by 54 percent mentioning number of other boards, 21 percent age, 10 percent mentioned gender diversity, 10 percent mentioned gender matching, 15 percent some other gender-based reason, and 22 percent some other factor. There were no differences in any of the gender-based rationales across any of the different diversity enhancing conditions (urgency prime, four female candidates, or control). There were significant differences across the gender-based rationales depending on whether a male or female left. Diversity rationales were offered more often when a male departed (19.5 percent of the time) than when a female departed (10.5 percent) ($\chi^2_{(1)} = 53.71, p<.001$). Gender matching was articulated as a reason more often when a female departed (17.5 percent of the time) than when a male departed (1.4 percent) ($\chi^2_{(1)} = 15.58 p<.001$). The residual “other gender-based rationale” was articulated as a reason more often when a female departed (14.6 percent of the time) than when a male departed (5.7 percent) ($\chi^2_{(1)} = 11.63, p<.001$). Finally, female participants were more likely to mention gender diversity (19.2 percent) than male participants (11.9 percent) ($\chi^2_{(1)} = 10.2, p<.01$).

To test Hypothesis 2, that when asked to judge the importance of a number of different decision criteria, participants will rate gender as significantly less important than other criteria, we again looked at participants’ ratings of the twelve decision factors provided. Just as in Study 2, the candidate’s board experience, candidate’s other board memberships, and the mix of years of board experience are the rated the highest. The mix of gender is ranked sixth and the

candidate's gender is ranked eighth; both criteria again significantly lower than the aforementioned top three criteria, supporting Hypothesis 2. Specifically, the third criterion of mix of years of board experience is ranked significantly higher than mix of genders ($t_{(727)} = 10.6$, $p < .001$) and candidate gender ($t_{(727)} = 12.9$, $p < .001$). There were no significant differences in ratings of these criteria across any of the conditions (urgency prime, four female candidates, and control). Both the candidate's gender and the mix of genders on the board were rated as more important when a female departed than when a male departed [candidate gender (female left: mean=3.08, s.d.=1.51; male left: mean = 2.53, s.d. = 1.46, $F_{(1,727)} = 25.3$, $p < .001$, $\eta^2 = .03$); mix of genders (female left: mean = 3.22, s.d. = 1.42; male left: mean = 2.78, s.d. = 1.40, $F_{(1,727)} = 17.2$, $p < .001$, $\eta^2 = .02$)].

To test Hypothesis 3, namely that the gender of the departing board member will continue to exert an influence on candidate selection even after controlling for participants' stated reasons for their choice, we again used a stepwise binary logistic regression. Just as in Study 2, the dependent variable was whether a female candidate was chosen. We first entered participant demographics, then the randomly varied candidate attributes (age, board experience, number of other boards), then the coded reasons that participants articulated for their selection, and finally the gender of the departing candidate.

Results, shown in Table 5, offer support for Hypotheses 1 and 3. When controlling for participant demographics, candidate attributes, and participants' articulated rationale for their selection (see Model 4), the gender of the departing board member still had a significant effect. When a female board member departed, a female candidate was more likely to be chosen. When participants specifically stated a gender based reasoning for their selection, they were

more likely to choose a female candidate, but even when these reasons are included in the model, the departure of a female board member still remains positive and significant.

(insert table 5 here)

To determine whether any of the interventions would increase the overall rate at which women are selected (regardless of who exits), we created dummy variables for each intervention (urgency prime and four female candidates) and compared these data to the control condition. We also created interactions between the intervention conditions and whether or not a female exited to see if the influence of the departing board member's gender was weakened or strengthened by either of the interventions. Results are shown in Table 5. Model 4 shows that creating an urgency about diversity (by reminding participants of the importance of diversity as well as starting with a more gender imbalanced board) creates no net benefit of adding more female board members. This Model also shows that increasing the ratio of female to male candidates does significantly increase participants' proclivity to select a female candidate.³ Model 5, however, confirms that even after this intervention, the gender matching heuristic continues to play a significant role in explaining the gender of the replacement director. When a female board member departs, a female candidate is significantly more likely to be the replacement than when a male board member departs. Moreover, as Model 6 in Table 5 shows, there were no interaction effects, meaning that the departing board member's gender was no less of an influence on the gender of the candidate selected.

³ Our results are unchanged if we run simpler models that exclude either candidate attributes, participant demographics and/or participants' articulated rationales for their selection. Results also unchanged if we substitute the 12 ranked criteria for the coded categories of participants articulated rationale for a candidate.

Discussion. Reminding participants of the importance of diversity as well as decreasing women's current proportional representation (from 3/9 to 2/9) did not increase the subjects' propensity to select females for the board. Perhaps this intervention was too subtle; our prime highlighting the benefits of diversity may have been too skills focused rather than demographic diversity focused. Alternatively, highlighting the importance of diversity may not attenuate gender matching because, as mentioned above, we believe this value is already salient (either because people believe diverse groups will perform better or because they believe diversity is important for normative, signaling reasons).

So what works? What did significantly increase participants' tendency to select a female candidate was when the number of female candidates in the pool increased. This confirms the common sense notion that with a wider choice of female candidates more women will be selected. Yet even here, the gender matching heuristic continues to play a significant role. Indeed, the effect of gender matching remained even when controlling for all manipulated candidate attributes (such as age and years of board experience) and for all participants' articulated rationales. Given that fewer than 10 percent of participants articulated the influence of gender matching as a reason for selecting new board members, we believe this heuristic may operate out of most participants' awareness.

GENERAL DISCUSSION

Overall, we find strong evidence for gender matching in board selection. Consistent with Hypothesis 1, both our field and experimental data show that selection of a (fe)male board member is significantly influenced by departure of a (fe)male⁴. Our lab studies suggest that this

⁴ It is worth noting that these field data represent a comprehensive sample of the board of directors for almost all public companies operating in the U.S. over the past decade.

process is largely underestimated in that participants identify other criteria as more important than gender and very few explicitly mention gender matching. Yet, when controlling for all these other criteria, gender matching remains a large and significant predictor.

Gender matching can slow progress towards gender parity on boards. In an effort to encourage participants to select more female candidates regardless of who exited, we tried two interventions. Prompting urgency for female selection by creating a smaller proportion of women on the existing board and underscoring the value of diversity failed to alter respondents' candidate selection. What worked to increase overall numbers of women being selected was including proportionally more women in the candidate pool. Below we discuss the implications of our results for the literature and for practice.

Although our study was not designed to test the existence of a dual processing model of cognition (Chaiken and Trope 1999; Evans, 2008; 2010; Kahneman and Frederick, 2002; Sloman, 1996; Stanovich, 1999), our findings are consistent with this research. Dual process theories posit that individuals have two information-processing systems that work together to produce judgments. There are many variants of dual process theories but they generally agree that one cognitive process (System 1), which may be called intuitive, operates rapidly, automatically, and with little effort. System 1 cognition (Kahneman, 2011) is also associative in that it relies on categorical-based judgment operating by principles of similarity. The other process (System 2), which may be called reflective, is more deliberative, complex, and effortful. It requires manipulation of explicit representations in working memory to produce decisions based on more abstract rules of logic or evidence (see Kahneman, 2011 for a review of this literature).

Our data suggest that board selection is the product of articulated factors such as candidate board experience (System 2 processing), but also when controlling for these System 2 criteria, board selection is also significantly influenced by categorical-based, gender matching (System 1). That both articulated attributes and gender matching influence behavior suggests these two cognitive processes work in concert. We acknowledge that debate exists as to whether our minds house two different cognitive architectures that operate in parallel to each other (Evans, 2010; 2012; Sloman, 1996) or merely two different cognitive modes that operate sequentially (Kahneman and Frederick, 2002; Stanovich, 1999). What our research shows, however, is that these cognitive systems are both operational in personnel selection.

The gender matching process was generally not very salient to the participants in our study. Gender was absent from the majority of participants' open-ended responses, and when asked to rank the importance of candidate gender or mix on board of genders, these criteria were rated as significantly less important than others. Thus, our results contribute to more recent theorizing that heuristics such as gender matching may operate unconsciously (Kahneman and Frederick, 2002; Evans, 2012), and their impact be underestimated. However, for a handful of participants, gender matching was mentioned as a criterion for selection. Prior research has focused on situational contexts that make heuristics more or less salient; our research points to a future need to investigate individual differences in people's awareness of these heuristics and what experiences might have cultivated these individual-based differences.

Prior gender research discusses the discrimination women may face based on stereotypic beliefs that may limit women's exposure to challenging assignments such as board appointments (King, Botsford, Hebl, Kazama, Dawson & Perfins, 2012). Similarly, other research has suggested that, gendered expectations for female behavior to be communal rather than

autonomous (O'Neill and O'Reilly, 2010; Amanatullah & Tinsley, 2013) may put them at a disadvantage for being seen as leaders (Eagly and Karau, 2002; O'Neill and O'Reilly, 2011), which is an important pathway to board membership. Still other research suggests that female board members, lacking mentoring, are less likely to learn and act in accordance to the “core norms” of the corporate elite and are thus less likely to be reappointed (McDonald and Westphal, 2013; Stern and Westphal, 2010; Westphal and Stern, 2006). In Studies 2 and 3 (conditions 1 and control), the candidate pool contained 33 percent women and yet in all cases the selection of a female candidate was well in excess of this level (56 percent in Study 2, and 65 percent in Study 3 Conditions 1, and 64 percent in Study 3 Control). In Study 3 Condition 2, where the candidate pool contained 67 percent women, the proportion choosing a female as a replacement was 86 percent, again in excess of 67 percent base rate. Thus, there is little evidence of explicit discrimination in the lab studies. While our research does not dispute the possibility of discrimination in female appointments to board memberships in the real world, it does suggest that some selection may simply reflect a heuristic process that acts against change. A related possibility is that the base rate of women being selected in actual board decisions is low because there are very few women in the candidate pool. Our finding that more women in the pool increased the selection of women lends some credence to this possibility. Future (perhaps qualitative) research that examines the selection process of new board members might prove fruitful.

Our research also shows that to simply appeal to arguments favoring diversity is not likely to be sufficient for creating substantial changes in decision-making (and hence increasing the overall probability that a female candidate would be selected). This may arise because these appeals activate System 2 processing, whereby people have to reason that diversity is good and

then act on that reasoning in the face of other reasoning suggesting that one select the most qualified candidate based on criteria deemed important (such as years of board experience). Moreover, we suspect most people do already believe diversity is important (if even for symbolic signaling reasons), but that gender-matching channels this energy towards gender diversity into simply a gender-replacement process.

What did increase the probability that a woman would be selected is increasing the proportion of women represented in the candidate pool. This manipulation worked in our experimental studies even though the base rate for selecting a female was quite high in this population of respondents (and indeed much higher than in the archival board data). One reason why it may have worked was because it substituted one type of gender matching (that of departing board member) for another type of gender matching (the proportion of females in the candidate pool). At a more general level, one way to accelerate the composition of boards may be to explore other subtle matching interventions. For example, selection processes might make salient the proportion of women in upper-middle management (i.e. the talent pool from which board members might be groomed). Making salient the higher gender proportions at this lower level could perhaps trigger gender matching at the board level.

Strengths of our study include the high internal and external validity, given that we were able to show that gender matching has a strong effect using both field and experimental data. The field data showed that gender matching has powerful effects in the real world while the lab studies enabled us to begin explore the decision process in more detail and test interventions for “what works.” Of course, our research also has some significant limitations. Our experimental participants generally did not articulate gender matching as having a powerful effect on their selection choice. Possibly, however, participants could have perceived that articulating this

decision criterion might be viewed negatively by the experimenter since it involved a simple heuristic rather than a more deliberative decision process (e.g., Norton, Vandello & Darley, 2004). We felt, however that this was relatively unlikely given that their responses were anonymous and we could think of few reasons why gender matching would be viewed negatively.

A more serious weakness, in our view, is that our experimental studies did not involve real board members but voluntary participants making hypothetical decisions. In future research, it would be beneficial to recruit actual board members and higher-level executives. Executive education programs might offer one avenue through which this could be accomplished. Having said this, we do feel, however, that the fact that we find similar results in both our field and lab studies helps mitigate concerns about sample validity.

Interestingly, we do see some gender asymmetry in that decision makers are more likely to articulate gender matching as a rationale for selection when a female leaves than when a male leaves. Thus, our data suggest this decision heuristic is probably more activated when a minority member leaves. To some extent, our field study reinforces this view in that the negative effect of the number of women on the board on the probability of selecting a woman reverses when the number or percentage of women becomes quite high (e.g., the majority). A fruitful avenue for future research would be to investigate this process in settings in which males are more likely to have minority status. Indeed, while we have focused on the selection of board members we believe that gender matching may be a quite common phenomenon that influences selection processes in many other settings where one category is under-represented.

CONCLUSION

Both archival and laboratory data showed evidence that people use a gender matching heuristic when selecting new corporate board members. When a woman departs, she is more likely to be replaced by a female and, when a man departs, he is more likely to be replaced by a male. This gender matching was unstated for the vast majority of participants, and is likely one important reason why, despite repeated calls for more gender parity on corporate boards, the representation of women on corporate boards has increased only at a very slow rate over the last 20 years. What works for increasing selection of females is increasing their proportional representation in the candidate pool.

Acknowledgements

We thank Max Bazerman, J. Keith Murnighan, Jeffrey Pfeffer, and participants from the Harvard Kennedy School Women and Public Policy seminar series for helpful comments on earlier drafts.

REFERENCES

Adams, R.B., and D. Ferreira

2009 “Women in the boardroom and their impact on governance and performance.” *Journal of Financial Economics*, 94: 291-309.

Aguilar, L. A.

2010 “Diversity in the Boardroom is important and, unfortunately, still rare”. Speech given at the SAIS Center for Transatlantic Relations Conference on “Closing the Gender Gap: Global Perspectives on Women in the Boardroom”. Washington DC (September).

<http://www.sec.gov/news/speech/2010/spch091610laa.htm>

Ahern, K.R., and A.K. Dittmar

2012 “The changing of the boards: The impact on firm valuation of mandated female board representation.” *Quarterly Journal of Economics*, 127: 137-197.

Amanatullah, E. and Tinsley, C.H.

2013 Negotiating for me, you and us: Advocacy as a moderator of backlash against female negotiators. *Organizational Behaviour and Human Decision Processes*, 102 (1): 110-122.

Ben-Amar, W., C. Francoeur, T. Hafsi, and R. Labelle

2013 “What makes better boards? A closer look at diversity and ownership”. *British Journal of Management*, 24: 85-101.

Bilimoria, D.

1995 “Women directors: The quiet discrimination.” *The Corporate Board*, July/August: 10-14.

Bostrom, N., and T. Ord

2006 “The reversal test: Eliminating status quo bias in applied ethics.” *Ethics*, 116: 656–679.

Bureau of Labor Statistics

2013 Current Population Survey. CPS Tables. Annual Averages.

<http://www.bls.gov/cps/tables.htm#empstat>; accessed June 2014

Camerer, C. F., and E. J. Johnson

1991 “The process-performance paradox in expert judgment: How can experts know so much and predict so badly?” In K. A. Ericsson & J. Smith (eds.), *Toward a General Theory of Expertise: Prospects and Limits*: 195–217. Cambridge, UK: Cambridge University Press.

Carter, D.A., F. D’Souza, B.J. Simkins, and W.G. Simpson

2010 “The gender and ethnic diversity of U.S. boards and board committees and firm financial performance.” *Corporate Governance*, 18: 396-414.

Carter, D.A., B.J. Simkins, and W.G. Simpson

2003 “Corporate governance, board diversity, and firm value.” *The Financial Review*, 38: 33-53.

Catalyst

2014 U.S. Women in Business. <http://www.catalyst.org/knowledge/us-women-business>; accessed June 2014.

Chaiken, S., and Y. Trope

1999 *Dual-Process Theories in Social Psychology*. New York: Guilford Press.

- Colbert, A. E., S. L. Rynes, and K. G. Brown**
2005 "Who believes us? Understanding managers' agreement with human resource findings." *Journal of Applied Behavioral Science*, 41: 304–325.
- Connelly, B.L., S.T. Certo, R.D. Ireland, and C.R. Reutzel**
2011 "Signaling theory: A review and assessment." *Journal of Management*, 37: 39-67.
- Correll, S.J**
2004. "Constraints into preferences: Gender, status, and emerging career aspirations." *American Sociological Review*, 69: 92-113.
- Daily, C.M., and D.R. Dalton**
2003 "Women in the boardroom: A business imperative." *Journal of Business Strategy*, 24: 1-2.
- Dawes, R.M.**
1971 "A case study of graduate admissions: Application of three principles of human decision making." *American Psychologist*, 26: 180-188.
- Dawes, R.M.**
1979 "The robust beauty of improper linear models in decision making." *American Psychologist*, 34: 571-582.
- DiMaggio, J., and W. Powell**
1983 "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields." *American Sociological Review*, 48: 147-160.
- Eagly, A. H., and S. J. Karau**
2002 "Role congruity theory of prejudice toward female leaders." *Psychological Review*, 109: 573-598.
- Eidelman, S., and C.S. Crandall**
2012 "Bias in favour of the status quo." *Social and Personality Psychology Compass*, 3: 270–281.
- Evans, J. St. B.T., P. Legrenzi, and V. Girotto**
1999 "The influence of linguistic form on reasoning: The case of matching bias." *The Quarterly Journal of experimental Psychology*, 52: 185–216.
- Evans, J. St. B.T.**
2008 "Dual-processing accounts of reasoning, judgment, and social cognition." *Annual Review of Psychology*, 59: 255-278.
- Evans, J. St. B.T.**
2010 "Intuition and reasoning: A dual-process perspective." *Psychological Inquiry*, 21: 313-326.
- Evans, J. St. B.T.**
2012 "Questions and challenges for the new psychology of reasoning." *Thinking and Reasoning*, 18: 5-31.
- Farrell, K., and P. L. Hersch**
2005 "Additions to corporate boards: The effect of gender." *Journal of Corporate Finance*, 11: 85-106.

- Francoeur, C., R. Labelle, and B. Sinclair-Desgagne**
2008 “Gender diversity in corporate governance and top management.” *Journal of Business Ethics*, 81: 83-95.
- Fombrun, C., and M. Shanley**
1990 “What’s in a name? Reputation building and corporate strategy.” *Academy of Management Journal*, 33: 233-258.
- Governance Metrics International**
2012
- Gregory-Smith, I., B.G.M. Main, and C.A. O’Reilly**
2014 “Appointments, pay and performance in UK boardrooms by gender.” *Economic Journal*, 124: F109–F128.
- Haselton, M.G., and D. Nettle**
2006 “The paranoid optimist: An integrative evolutionary model of cognitive biases.” *Personality and Social Psychology Review*, 10: 47-66.
- Highhouse, S.**
1997 “Understanding and improving job-finalist choice: The relevance of behavioral decision research.” *Human Resource Management Review*, 7: 449-470.
- Judd, C.M., and G.H. McClelland**
1989 *Data Analysis: A Model Comparison Approach*. New York: Harcourt Brace.
- Jurkus, A.F., J.C. Park, and L.S. Woodard**
2008 “Gender diversity, firm performance, and environment.” SSRN Working Paper, Feb. 28.
- Kahneman, D.**
2011 *Thinking, Fast and Slow*. NY: Macmillan.
- Kahneman, D.**
2003 “A perspective on judgment and choice: Mapping bounded rationality.” *American Psychologist*, 58: 697–720.
- Kahneman, D., and S. Frederick**
2002 “Representativeness revisited: Attribution substitution in intuitive judgment.” In T. Gilovich, D. Griffin, and D. Kahneman (eds.), *Heuristics and Biases: The Psychology of Intuitive Judgment*: 49-81. Cambridge, UK: Cambridge University Press.
- Kahneman, D., A. Tversky, and P. Slovic**
1982 *Judgment under Uncertainty: Heuristics and Biases*. Cambridge University Press.
- Keeney, R., and H. Raiffa**
1976 *Decisions with Multiple Objectives: Preferences and Value Tradeoffs*. New York: Wiley.
- King, E.B., W. Botsford, M.R. Hebl, S. Kazama, J.F. Dawson, and A. Perfins**
2012 “Benevolent sexism at work: Gender differences in the distribution of challenging developmental experiences.” *Journal of Management*, 38: 1835-1062.
- Krawiec, K.D., J.M. Conley, and L.L. Broome**
2013 “The danger of difference: Tensions in directors’ views of corporate board diversity.” *University of Illinois Law Review*, 3: 919-958.

Lorsch, J.W., and E. MacIver

1989 *Pawns or Potentates: The Reality of America's Corporate Boards*. Boston, MA: HBS Press.

McDonald, M.L., and J. D. Westphal

2013 "Access denied: Low mentoring of women and minority first-time directors and its negative effects on appointments to additional boards." *Academy of Management Journal*, 56: 1169-1198.

Main, B.G.M., C.A. O'Reilly, and J. Wade

1993 "Top executive pay: Tournament or teamwork?" *Journal of Labor Economics*, 11: 606-628.

Meehl, P. E.

1954 *Clinical versus Statistical Prediction: A Theoretical Analysis and a Review of the Evidence*. Minneapolis, MN: University of Minnesota.

Meyer, J., and B. Rowan

1977 "Institutionalized organizations: Formal structure as myth and ceremony." *American Journal of Sociology*, 83: 340-363.

Miller, T., and M. Triana

2009 "Demographic diversity in the boardroom: Mediators of the board diversity-firm performance relationship." *Journal of Management Studies*, 46: 755-786.

Minichilli, A., A. Zattoni, S. Nielsen and M. Huse

2012. "Board task performance: An exploration of micro- and macro-level determinants of board effectiveness." *Journal of Organizational Behavior*, 33: 193-215.

Musteen, M., D.K. Datta, and B. Kemmerer

2010 "Corporate reputation: Do board characteristics matter?" *British Journal of Management*, 21: 498-510.

Norton, M.I., J.A. Vandello and J.M. Darley

2004 "Casuistry and social category bias." *Journal of Personality and Social Psychology*, 87: 817-831.

O'Neill, O.A., and C.A. O'Reilly

2010 "Careers as tournaments: The impact of sex and gendered organizational culture preferences on MBAs' income attainment." *Journal of Organizational Behavior*, 31: 856-876.

O'Neill, O.A., and C.A. O'Reilly

2011 "Reducing the backlash effect: Self-monitoring and women's promotions." *Journal of Occupational and Organizational Psychology*, 84: 825-832.

O'Reilly, C.A., and B.G.M. Main

2010 "Economic and psychological perspectives on CEO compensation: A review and synthesis." *Industrial and Corporate Change*, 19: 1-38.

O'Reilly, C.A., and B.G.M. Main

2012 "Women in the boardroom: Symbols or Substance?" SSRN Working Paper No. 2098.

O'Reilly, C.A., B.G.M. Main and G.S. Crystal

1988 "CEO compensation as tournament and social comparison: A tale of two theories." *Administrative Science Quarterly*, 33: 257-274.

Prentice, D.A., and D.T. Miller

2007 “Psychological essentialism of human categories.” *Current Directions in Psychological Science*, 16: 202-206.

Rhode, D.L., and A.K. Packel

2010 “Diversity on corporate boards: How much difference does difference make?” Working Paper #89, Rock Center for Corporate Governance, September.

Ridgeway, C.L. and L. Smith-Lovin

1999. “The gender system and interaction” *American Sociological Review*, 25: 191-216.

Ridgeway, C.L.

1997. “Interaction and the conservation of gender inequality: Considering employment.” *American Sociological review*, 62: 218-235.

Rindova, V.P., I.O. Williamson, A.P. Petkova, and J.M. Sever

2005 “Being good or being known: An empirical examination of the dimensions, antecedents, and consequences of organizational reputation.” *Academy of Management Journal*, 48: 1033-1049.

Rose, C.

2007 “Does female representation influence firm performance? The Danish evidence.” *Corporate Governance*, 15: 404-413.

Ryan, M.K., and S.A. Haslam

2005 “The glass cliff: Evidence that women are over-represented in precarious leadership positions.” *British Journal of Management*, 16: 81-90.

Schmidt, F. L., and J. E. Hunter

1998 “The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings.” *Psychological Bulletin*, 124: 262–274.

Shrader, C.B., V.B. Blackburn, and P. Iles

1997 “Women in management and firm financial performance: An exploratory study.” *Journal of Managerial Issues*, 9: 355-372.

Shin, T.

2013 “Fair pay or power play? Pay equity, managerial power, and compensation adjustments for CEOs.” *Journal of Management* (in press).

Simon, H.

1991 “Bounded rationality and organizational learning.” *Organization Science*, 2: 125-134.

Sloman, S.A.

1996 “The empirical case for two systems of reasoning.” *Psychological Bulletin*, 119: 3-22.

Spencer Stuart

2012 Spencer Stuart U.S. Board Index 2012.

Stanovich, K.E.

1999 *Who is Rational? Studies of Individual Differences in Reasoning*. Mahway, NJ: Lawrence Erlbaum Associates, Inc.

Stern, I., and J.D. Westphal

2010 “Stealthy footsteps to the boardroom: Executives’ backgrounds, sophisticated interpersonal influence behavior, and board appointments.” *Administrative Science Quarterly*, 55: 278-316.

Tetlock, P. 2005 *Expert Political Judgment: How Good Is It? How can we know?* Princeton, NJ: Princeton University Press.

Triana, M., T.L. Miller and T.M. Trzebiatowski

2014. “The double-edged nature of board gender diversity: Diversity, firm performance, and the power of women directors as predictors of strategic change.” *Organization Science*, 25: 609-632.

Valenti, A.

2007 “A new glass ceiling in the boardroom?” *Directors & Boards*, 31: 20.

von Neumann, J., and O. Morgenstern

1944 *Theory of Games and Economic Behavior*. New York: Wiley Press.

Wason, P. C.

1966 "Reasoning". In Foss, B. M. (ed.), *New Horizons in Psychology*: 135-151. Harmondsworth: Penguin.

Weber, M.

1985 “A method of multiattribute decision making with incomplete information.” *Management Science*, 31: 1365-1371.

Westphal, J.D., and L.P. Milton

2000 “How experience and network ties affect the influence of demographic minorities on corporate boards.” *Administrative Science Quarterly*, 45: 366-398.

Westphal, J.D., and I. Stern

2006 “The other pathway to the boardroom: Interpersonal influence behavior as a substitute for elite credentials and majority status in obtaining board appointments.” *Administrative Science Quarterly*, 51: 169-204.

Westphal, J.D., and E.J. Zajac

1995 “Who shall govern? CEO/Board power, demographic similarity, and new director selection.” *Administrative Science Quarterly*, 40: 60-83.

Westphal, J.D., and E.J. Zajac

2014 “A behavioral theory of corporate governance: Explicating the mechanisms of socially situated and socially constituted agency.” *The Academy of Management Annals*, 7: 607-661.

Figure 1: Average Percentage of Women on Boards of Directors by Year (2002-2011)

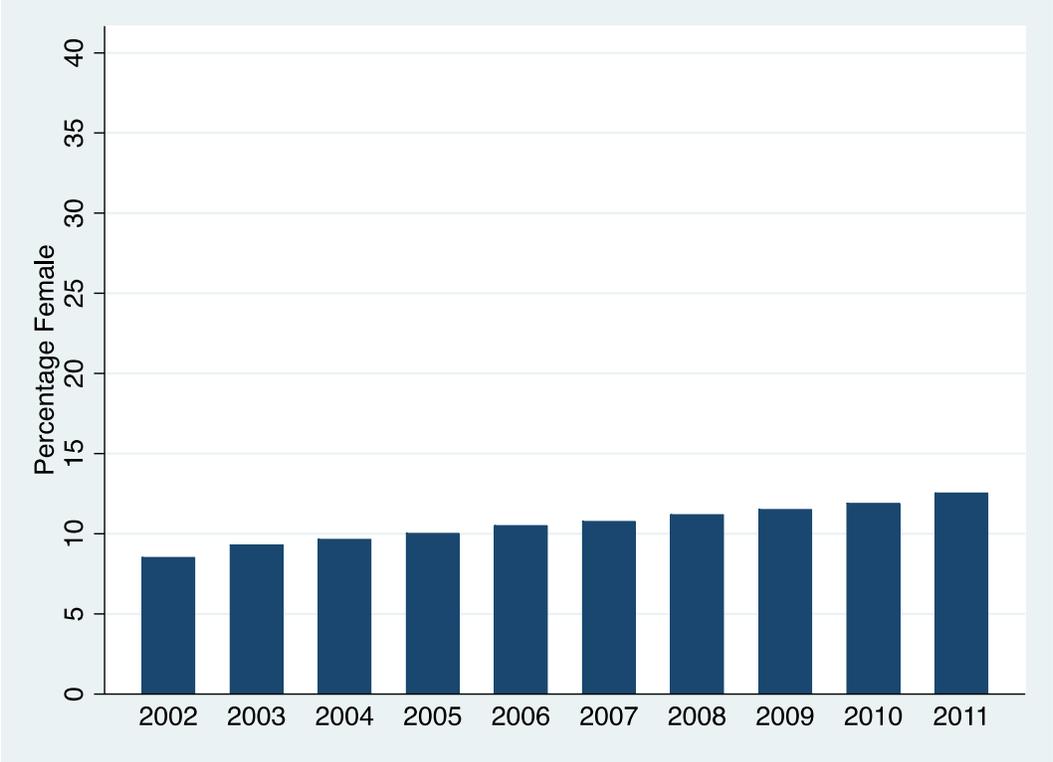


Table 1: Descriptive Statistics and Correlations of Equilar Data (2002-2011)

Variable	Var	Mean	S.D.	1	2	3	4	5	6	7	8	9
Female	1	0.13	0.33	1								
Log Assets	2	7.02	2.04	0.09	1							
One Year Market Return	3	0.22	6.06	-.0002	-0.03	1						
Number on Board	4	8.75	2.63	0.08	0.59	-0.01	1					
Percent female	5	9.16	9.92	0.04	0.29	.0023	0.23	1				
Number of Exiting Female Directors	6	0.14	0.4	0.08	0.13	0.01	0.15	0.39	1			
Number of Exiting Male Directors	7	1.45	1.54	-0.07	0.06	-0.01	0.23	-0.06	0.21	1		
Number of Male Directors	8	7.89	2.34	0.06	0.48	-0.01	0.93	-0.12	0.01	0.26	1	
Number of Female Directors	9	0.86	0.95	0.05	0.44	0	0.46	0.93	0.4	.003	0.11	1

Table 2: The Probability of Appointing a Female to the Board: 2002-2011

	Model 1	Model 2	Model 3	Model 4	Model 5
Log Assets	0.0967** (0.014)	0.1699+ (0.092)	0.1715+ (0.092)	0.1623+ (0.093)	0.1695+ (0.093)
One Year Market Return	0.0006 (0.003)	0.0136 (0.033)	0.0147 (0.033)	0.0084 (0.032)	0.0131 (0.033)
Number on Board	0.0620** (0.010)	0.0730** (0.027)	0.0838** (0.027)		
Percent Females on Board	-0.0122** (0.003)	-0.1875** (0.007)	-0.2258** (0.011)		
Number of Exiting Female Directors	0.6911** (0.053)	1.1149** (0.077)	1.0858** (0.077)	1.2235** (0.079)	1.1895** (0.080)
Number of Exiting Male Directors	-0.2635** (.0186)	-0.2559** (0.027)	-0.2529** (0.027)	-0.2624** (0.027)	-0.2661** (0.027)
Percent Females on Board Squared			0.0013** (0.000)		
Number of Male Directors				.2834** (0.028)	.5192** (0.091)
Number of Male Directors Squared					-.0121** (.005)
Number of Female Directors				-1.8500** (0.071)	-2.3792** (0.109)
Number of Female Directors Squared					.1839** (0.026)
Year Fixed Effects	Y	Y	Y		Y
Firm Fixed Effects	N	Y	Y		Y
Observations	19588	11435	11435	11435	11435
Number of Firms	3909	1570	1570	1570	1570
Log Likelihood	-7261.3	-3300.6	-3290	-3277.4	-3250.14
Standard errors in parentheses					
** p<0.01, * p<0.05,					
+ p<0.1					

Table 3: Mean Importance of Candidate Criteria (Study 2)

	Mean	Std. Dev.
1. Candidate's Years of Board Experience	4.23	0.708
2. Candidate's Other Board Memberships	4.07	0.681
3. The Mix of Years of Board Experience on the Board	3.85	0.904
4. The Mix of the Number of Other Board Memberships on the Board	3.71	0.895
5. Candidate's Functional Expertise	3.34	1.073
6. Candidate's Age	3.17	1.026
7. The Mix of Genders on the Board	3.13	1.412
8. Candidate's Gender	3.01	1.48
9. The Mix of Ages on the Board	2.91	1.08
10. The Mix of Functional Areas on the Board	2.61	1.097
11. The Mix of Corporations on the Board	2.04	1.05
12. The Candidate's Corporation	1.74	0.91

Table 4: Logistic Regression Models Predicting Whether a Female Was Appointed to the Board (Study 2)

Study 2	Model 1	Model 2	Model 3	Model 4
<i>Participant Demographics:</i>				
Age	0.054	0.057	0.028	-0.014
Female	0.622	0.633	0.393	0.461
<i>Candidate Attributes:</i>				
Average Female Age		-0.049	-0.035	-0.047
Average Male Age		-0.015	0.049	0.037
Average Female Experience		-0.036	0.188	0.202
Average Male Experience		-0.205	-0.512	-0.577*
Average Other Boards Memberships-Females		-0.123	-0.461	-0.427
Average Other Boards Memberships-Males		0.326	0.059	0.172
<i>Participant's Articulated Rationale for Selection:</i>				
Age			-2.116*	-2.113*
Board Experience			0.252	0.142
Number of Boards			-0.365	-0.449
Other Reason			0.060	0.102
Gender Diversity			20.931	21.036
Gender Matching			0.042	0.079
Other Gender Reason			4.151***	4.145***
<i>Gender of Departing Board Member</i>				
Contrast1: Control vs. Gender Information				-0.898+
Contrast2: Female not Male departing				1.248*
Constant	-1.194	3.487	1.468	3.851
Observations	159	159	159	159
-2LL	215.289	212.651	149.056	143.068
Cox & Snell R Square	.025	.041	.357	.381
Nagelkerke R Square	.034	.055	.478	.509

All tests are two-tailed. *** p<0.001, ** p<0.01, * p<0.05, + p<.1

Table 5: Logistic Regression Models Predicting Whether a Female Was Appointed to the Board (Study 3)

Studies 5	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Participant Demographics:</i>						
Age	0.013	0.013	0.010	0.010	0.004	0.003
Female	0.290	0.291	0.113	0.122	0.123	0.123
Minority	-0.021	-0.110	-0.022	-0.044	-0.049	-0.051
College	0.276	0.322	0.246	0.304	0.213	0.221
Republican	-0.875***	-0.980***	-0.978***	-0.985***	-0.902**	-0.929**
Independent	-0.632**	-0.599**	-0.446*	-0.372	-0.449	-0.470
<i>Candidate Attributes:</i>						
Average Female Age		-0.104	-0.124*	-0.118	-0.118	-0.117
Average Male Age		0.002	-0.028	-0.016	-0.034	-0.033
Average Female Experience		0.248*	0.310**	0.312**	0.363**	0.360**
Average Male Experience		-0.463***	-0.526***	-0.532***	-0.637***	-0.658***
Average Other Board Memberships-Females		-0.058	-0.117	-0.114	-0.156	-0.145
Average Other Board Memberships-Males		0.102	0.112	0.124	0.087	0.077
<i>Participant's Articulated Rationale for Selection:</i>						
Age			-0.179	-0.179	-0.152	-0.122
Board Experience			-0.077	-0.110	0.052	0.086
Number of Boards			0.110	0.086	0.082	0.104
Other Reason			-0.163	-0.133	-0.206	-0.201
Gender Diversity			2.416***	2.128***	2.531***	2.487***
Gender Matching			2.669***	2.490***	2.928***	2.927***
Other Gender Reason			20.805***	20.871	21.307	21.353
<i>Gender of Departing Board Member</i>						
Female Departing				0.667**	0.662**	0.692*
<i>Effect of Interventions</i>						
Diversity Urgency					-0.290	-0.488
Four Female Candidates					1.705***	1.964***
<i>Intervention X Gender of Departing Board Member</i>						
Diversity Urgency) X Female Departing						0.424
Four Female Candidates X Female Departing						-0.608
Constant	0.780*	7.923	10.554*	9.193	10.548	10.549
Observations	701	701	701	701	701	701
-2LL	789.497	760.211	617.543	606.965	542.064	538.755
Cox & Snell R Square	0.039	0.078	0.248	0.259	0.325	0.328
Nagelkerke R Square	0.056	0.113	0.360	0.376	0.472	0.476

*** p<0.001, ** p<0.01, * p<0.05

Appendix 1

Basic text of the Laboratory Studies

You are a Board member of a large, publicly traded company. The Board meets once a quarter (every three months) to make sure the company is functioning well and in the best interests of all its stakeholders. You are also the Chair of the Board's Nominating Committee. As such, it is your job to select the replacement for any vacancy that appears on the Board.

By company charter, the Board of Directors is made up of nine Board members. Three of these members are internal to the company, meaning they also serve as company officers. They are the company's Chief Executive Officer, Chief Finance Officer and Chief Operating Officer. The other six Board members are external to the company, meaning they are corporate officers in other companies.

[Stephen/ Stephanie] Brooks, one of the external Board members is departing and your task is to select a replacement.

To help you select a new board member, the company has hired a team of recruiters to review possible candidates. This team has narrowed the pool down to six candidates whose resumes are summarized on the next screen.

Your job is to select the candidate whom you think will work best with the remaining Board members. To help in your selection, it may be useful to know about this current Board.

The current Board of Directors is typical of those in the industry. It has three females and six males (including [Stephen/ Stephanie] Brooks, who is now departing). The Directors range in age from 45-68 years old. They each sit on anywhere from one to five other corporate Boards. Their years of Board experience range from five to 17 years.

As you read about the candidates, please think about who will be the best replacement.

Appendix 2

Candidate Choice Set

Below are the Executive Summaries of the six potential Board Candidates

Candidate A

Title: Executive Vice President of Operations

Company: Slidell Company

Age: {insert random age }

Years of board experience: {insert random experience years }

of other boards currently serving on: {insert random # boards }

Candidate B

Title: Executive Vice President of Federal Relations

Company: Larkspur Industries

Age: {insert random age }

Years of board experience: insert random experience years }

of other boards currently serving on: {insert random # boards }

Candidate C

Title: Executive Vice President of Purchasing

Company: Nelicore, Inc.

Age: { insert random age }

Years of board experience: {insert random experience years }

of other boards currently serving on: {insert random # boards }

Candidate D

Title: Executive Vice President of Marketing

Company: Krendle, Inc.

Age: {insert random age }

Years of board experience: {insert random experience years }

of other boards currently serving on: {insert random # boards }

Candidate E

Title: Executive Vice President of Distribution

Company: Halifax Corp.

Age: {insert random age }

Years of board experience: {insert random experience years }

of other boards currently serving on: {insert random # boards }

Candidate F

Title: Executive Vice President of Sales

Company: Euclides Company

Age: {insert random age }

Years of board experience: {insert random experience years }

of other boards currently serving on: { insert random # boards }

Whom do you select?

Candidate A

Candidate B

Candidate C

Candidate D

Candidate E

Candidate F