

What Have We Learned About Gender From Candidate Choice Experiments?

A Meta-analysis of 42 Factorial Survey Experiments

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Abstract

Candidate choice survey experiments in the form of conjoint or vignette experiments have become a standard part of the political science toolkit for understanding the effects of candidate characteristics on vote choice. We collect 42 studies and re-analyze them using a standardized approach. We find that the average effect of being a woman (relative to a man) is a gain of 2 percentage points. We find some evidence of heterogeneity as this difference appears to be somewhat larger for white (versus non-white) candidates, and among survey respondents who are women (versus men) or identify as Democrats or Independents (versus Republicans). Our results add to the growing body of evidence that voter preferences are not a major factor explaining the persistently low rates of women in elected office.

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Do voters discriminate against women running for office? Owing to the real, pervasive, and pernicious biases against women in many areas of society, a reasonable guess would be that voters tend to prefer men over women political candidates. In the United States, the 2016 Presidential election in particular confirmed for many observers that women seeking higher office face unique challenges, including gender-based discrimination.¹

Setting aside that particular election, the empirical evidence of voter bias against women candidates (conditional on running) is surprisingly thin. Some early studies on women in politics indeed reported gender gaps in electoral outcomes. In the 1960s and early 1970s, men tended to outpoll women in many Western democracies, albeit by relatively small margins (e.g., Darcy and Schramm 1977; Hills 1981; Kelley and McAllister 1984). For example, Kelley and McAllister (1984) reported that, conditional on party affiliation, vote margins for women in Britain and Australia were on average 2.5 percentage points and 4 percentage points lower, respectively. However, election returns from the late 1970s onwards indicate these gender-based discrepancies in elections have by and large dissipated. When women run for political office, they are not less likely to win than men. In the United States, for example, women candidates typically garner the same level of support as men with similar characteristics, both in primary and general elections (e.g., Zipp and Plutzer 1985; Welch et al. 1987; Fox 2005). Likewise, a study that tracked vote shares for parliamentary candidates between 1903 and 2004 in Australia found that gender-based discrepancies diminished drastically after the 1980s, and win rates for women today are virtually identical to those of men (King and Leigh 2010). An analysis of elections to the U.S. House of Representatives from 1980 to 2012 comes to similar conclusions, even when comparing ideologically-similar men and women (Thomsen 2018). And even in 2016, when concerns about gender discrimination and misogyny in politics were heightened in the U.S. context, women in non-Presidential contests encountered little resistance from voters. Democratic women running for the U.S. House

¹See for example: Burleigh (2016); Crockett (2016).

of Representatives outpolled men in both primary and general elections while Republican women performed only slightly worse than men candidates (Dittmar 2017).

These analyses of electoral returns yield the important descriptive finding that conditional on running, men and women tend to win elected office at similar rates. It is tempting to give this finding a causal interpretation, i.e., that the average causal effect of being a woman (versus a man) on the probability of winning an election is close to zero. However, the men and women who successfully arrive on the ballot are different from each other in more ways than gender alone. Previous work shows that women who run are of higher quality than their men counterparts (Anzia and Berry 2011; Fulton 2011). Further, the women who *win* appear (at least by some measures) to go on to become superior elected officials (Jeydel and Taylor 2003; Brollo and Troiano 2016). The complex factors that eventuate in a person's name appearing on the ballot are surely different by gender so that the types of men and women who end up as candidates differ from each other in both observed and unobserved ways. If so, then comparisons of men and women candidates (even controlling for observables) may yield biased estimates of the true effect of gender on vote choice. Indeed, if the women who run are higher quality than otherwise observationally-equivalent men, then electoral gender parity would imply bias against women.

In response to this inferential difficulty, scholars have turned to a particular flavor of randomized experiment, the candidate choice survey experiment. In these studies, survey respondents evaluate hypothetical candidates – presented to them either in vignettes or statements of their personal characteristics in a conjoint table – and report whether they

would or would not vote for a given candidate. Because the gender² of the candidate (and typically, many of the other candidate characteristics) is randomized, a comparison of the support for women candidates versus men candidates yields an estimate of the effect of gender that is not biased by unobserved confounding factors that may plague many observational analyses.

While survey experiments provide design-based assurances that the causal effect estimates are unbiased, one may still be concerned that the question they answer is not quite the question we care about. We want to know the average effect of switching the genders of men and women candidates in the real world, but the question answered by the hypothetical candidate choice experiment is subtly different. First, we have some evidence that subjects evaluate hypothetical and real candidates differently (McDonald 2019); the true effect of gender might be different for hypothetical versus real candidates. Second, we might be concerned that subjects spend less cognitive effort when filling out a survey questionnaire than they do when filling out a ballot. Third, we might worry that the observed response patterns are due to *experimenter demand effects* (Zizzo 2010) as respondents may anticipate the research objectives of a study and adjust their answers accordingly to “confirm” the researcher’s hypotheses. Respondents may also desire to appear like “good” people who behave in ways that are socially desirable, thus masking their true preferences (e.g., Krupnikov et al. 2016). Such explanations are difficult to square, however, with recent investigations that have found very little evidence for demand effects, especially in the context of stud-

²In this article, we will speak exclusively of candidate gender being either a “man” or a “woman.” We recognize that gender can take on many values beyond these two. However, none of the experiments in our sample assign candidates a gender beyond man or woman. We also recognize that gender is socially-constructed and a distinct concept from biological sex (Bittner and Goodyear-Grant 2017). Our goal is to understand the effects of the social construction, but we grant that in these experiments, gender and sex are perfectly collinear in the sense that when respondents are informed that a candidate is a woman, they likely infer both her gender and her sex.

ies administered online (e.g., De Quidt et al. 2017; Hopkins 2009). For example, response patterns did not differ systematically when researchers varied the amount of information that participants received about the study objectives at the beginning of an online survey (Mummolo and Peterson 2019). Another study randomly altered demographic information about the researcher in an online experiment and reported no difference in how respondents answered subsequent questions on racial resentment, gender roles, or support for women and minority presidential candidates (White et al. 2018).

Abramson et al. (2019) offer a different critique of conjoint experiments. They prove that a positive, statistically significant average treatment effect for the “woman” characteristic need not imply that a majority of the survey subjects prefer women candidates to men candidates. The explanation for this counterintuitive result is that it is possible that the share of subjects who prefer women to men is smaller than 50%, but that that share holds that preference more intensely. We therefore do not interpret these experiments as revealing majority preference, but rather as revealing the average effect of gender on electoral support, the interpretation emphasized by Bansak et al. (2020) in their response to Abramson et al. (2019).

We aim in this article to document and summarize in one place what has been learned from hypothetical candidate choice experiments about how gender influences voters’ support for political candidates. At this point, many such experiments have been conducted (indeed, by our count, gender is the most common candidate attribute to be randomized in these experiments). We collected 42 conjoint and factorial candidate-choice experiments where the researchers randomized candidate gender and studied respondents’ vote choice. Our set of 42 includes studies conducted on six continents and in countries with widely varying levels of democratization.³ Our meta-analytic estimate of the average effect of being a woman

³That said, the majority of studies on gender and vote choice we revisit here were conducted in industrialized, democratic countries.

(versus a man) is an approximately 2 percentage point increase in support. While we do observe some study-to-study variation, positive average treatment effects are common across the globe. We show some variation in effects associated with candidate and respondent characteristics (we find a small negative effect among Republican respondents in the U.S.), but the overall picture is more homogeneous than we would have expected *ex ante*.

Our meta-analytic results may come as a surprise to some, as they did to us when we began the project. Indeed, many of the authors of the experiments included in our meta-analysis expressed similar surprise at their own results as well. Clayton et al. (2019) write, “To our surprise, our experimental results did not reveal a generalized public distaste for women leaders.” Kage et al. (2018) remark, “We were surprised to find, based on three experimental surveys, that Japanese voters do not harbor particularly negative attitudes toward female politicians.” Saha and Weeks (2019) conclude, “Contrary to the expectations of Hypothesis 1, we find no evidence that voters penalize ambitious women.” Teele et al. (2018) summarize their main result as “In both surveys and among most subgroups we do not find evidence that women are discriminated against *as* women. In fact, in the baseline results from each survey, presented in Figure 1, female candidates actually get a *boost* over men” (emphasis in original). Our meta-analysis demonstrates that these individual findings were not flukes but instead generalize quite well to many times and contexts.

Supply and demand explanations for candidate selection

Women make up roughly half of the world’s population but hold only 23 percent of the elected positions in national legislatures (Inter-Parliamentary Union 2018). The existing theory and evidence tends to group possible causes of this persistent gender gap in electoral politics into factors that shape the supply and demand for politicians who are women (e.g., Karpowitz et al. 2017; Holman and Schneider 2018).

Supply-side explanations consider each of the critical junctures that may shape whether and what sorts of women end up standing for election. Women might not aspire to run for office at the same rates as men do (Lawless and Fox 2010; Kanthak and Woon 2015). They also might face higher entry costs into politics, especially in primary-based electoral systems (Lawless and Pearson 2008), and they might be more averse to highly competitive settings than men (Preece and Stoddard 2015). As many women continue to be primary caregivers for their families, they may shy away from politics when their political career adversely affects their work-life balance, for example in the form of extended commutes to legislative offices (Silbermann 2015) or even increased risk of divorce (Folke and Rickne 2019). In addition, women are less likely to be recruited by party gatekeepers to run for office (Crowder-Meyer 2013). By contrast, when parties face high levels of electoral competition, they might be more inclined to consider women and minority candidates if it increases their chances of winning (Folke and Rickne 2016).

Others have flagged demand-side barriers. Voters simply might not have a “taste” for women candidates and politicians, or gender stereotypes about leadership abilities may disadvantage women at the ballot box (e.g., Alexander and Andersen 1993; Brescoll and Okimoto 2010; Sanbonmatsu 2002; Smith et al. 2007). One possibility sometimes invoked in the popular press is that women might lack political skill or be otherwise legislatively deficient, so voters elect them at lower rates. The empirical record on this count, however, indicates that women are effective legislators (Jeydel and Taylor 2003) and are often more likely to get things done than men (Brollo and Troiano 2016), though this pattern may result from a selection process in which only the highest quality women are elected (Anzia and Berry 2011; Fulton 2011).

Hypothetical candidate choice experiments mainly shed light on the demand side of the candidate selection process, as they measure voter support for candidates of various types (one might argue that they also inform the supply side to the extent that they measure

the tastes of party gatekeepers). Our paper aims to summarize the evidence from candidate choice survey experiments on three distinct demand-side explanations. First, we explore whether individuals discriminate against women candidates on average. Next, we ask whether or not individuals discriminate against *specific types* of women candidates, with a focus on the intersections between race, ethnicity, and gender. Lastly, we test whether certain *groups* of respondents display stronger (or weaker) preferences for women candidates. We briefly review the theory underlying each of these three before turning to our meta-analysis of candidate choice experiments.

Voter Preferences and Gender Discrimination

Hostility against women or a general distaste for women politicians predicts, all else equal, that the effect of being a woman on candidate support should be negative. Perceptions about gender roles may shape evaluations of political candidates, especially in the context of male-dominated arenas such as politics. Women candidates may face electoral penalties because they are perceived as defying traditional sex roles and prescriptive gender norms, even when they are as qualified for the job as men (the *gender-incongruity hypothesis*, e.g., Brescoll and Okimoto 2010). Indeed, in one study, respondents rated fictitious men presidential candidates as more skilled and as having more political potential than women candidates despite having otherwise identical profiles (Smith et al. 2007). In a study of state legislative contests in the US between 1970-1980, men candidates garnered more support than women candidates by an average of two percentage points (Welch et al. 1985).

However, more recent studies have suggested that outright discrimination against women political candidates may not be as prevalent as it once was. An observational study of candidates for US Congress did not find evidence of differential candidate evaluations by gender after conditioning on partisanship (Dolan and Lynch 2014). Similarly, a study of local media coverage of political candidates in nearly 350 Congressional contests found no

significant differences in the portrayal of women and men office-seekers (Hayes and Lawless 2015). Indeed, our meta-analysis of candidate choice experiments finds no support for the gender-incongruity hypothesis either. On the contrary, across all studies included in our analysis, voters on average *prefer* women candidates over men.

Interactions with Other Candidate Characteristics

Even if voters do not discriminate against women in general, they might evaluate certain *types* of women or men candidates differently. In other words, women candidates might face double standards in terms of the qualifications or attributes they need to bring to the table if they want to succeed in politics (the *double-standard hypothesis*, see Teele et al. 2018). Experimental research has demonstrated penalties for women who overtly “seek power” or who are as assertive as men (Brescoll and Okimoto 2010). In addition, respondents react negatively to women who show emotions like anger (Brescoll and Uhlmann 2008; Brooks 2011). However, in a recent conjoint experiment, Teele et al. (2018) found that women faced bigger electoral *advantages* than men when they had a larger family, and for all other characteristics – age, marital status, experience in politics, and previous occupation – men and women were not rewarded or penalized differentially. As we will show below, the balance of evidence from a large set of candidate choice experiments also does not support the double-standard hypothesis.

Besides possible double standard, intersectional theories of gender and politics predict that whatever effects candidate gender may have on candidate support, the effects are likely to be different for candidates of different racial or ethnic groups (e.g., Hooks 1982; Crenshaw 1991; Hardy-Fanta 2013; Mügge and De Jong 2013; Holman and Schneider 2018). Even if the effect of being a woman is positive for white candidates, it need not be for black candidates. Candidate choice experiments often randomize both characteristics of candidates independently, so are well-placed to evaluate this possibility. As we will demonstrate, once

we aggregate across a number of studies that manipulate both gender and race, we find only a modest difference in the effect of gender for white and nonwhite candidates.

Interactions with Respondent Characteristics

Identity-based theories of vote choice suggest that individuals favor political candidates who “look” and “think” like themselves (Converse et al. 1961; Besley and Coate 1997). We might therefore expect voters who are women to prefer candidates who are women as well (the *gender affinity hypothesis*, see Dolan 2008). Findings from a number of survey and experimental studies lend some support to this hypothesis (Dolan 1998; Plutzer and Zipp 1996; Sanbonmatsu 2002). However, more recent studies report no such gender affinity pattern (Dolan 2008; Teele et al. 2018). Some have suggested that gender-based group consciousness provides the necessary link between gender identity and political preferences (e.g., Hildreth and Dran 1994). Such a gender-based group consciousness is sometimes equated with feminist consciousness (Gurin 1985; Klatch 2001) but can extend beyond feminism and instead interact with conservatism in important ways (Mendoza and DiMaria 2019; Schreiber 2002). In the present meta-analysis, we find some evidence supporting a gender affinity argument: the positive effect of being a woman candidate is larger among respondents who are themselves women than among men.

Candidates’ personal characteristics may also provide informational shortcuts for voters, allowing them to infer candidates’ policy positions and ideological orientations in low-information environments (Downs 1957; Popkin 1991; Kirkland and Coppock 2018). Similar to candidate partisan affiliation, candidate gender may provide such a shortcut (the *gender heuristic hypothesis*). For example, women candidates are often believed to be more liberal than men candidates, all else equal, which can advantage women Democratic candidates over their male counterparts amongst liberal voters (McDermott 1997, 1998). Conversely, Republican women running for office may face additional barriers (Bucchianeri 2017).

In addition, gender stereotypes may mold perceptions of issue positions that candidates hold and of their skills and leadership abilities. Women are seen as “more dedicated to honest government” (McDermott 1998) and viewed as better suited to handling issues related to women, children, the aged, and the poor (Huddy and Terkildsen 1993). By contrast, men politicians are often more trusted with issues related to security or the economy (Holman et al. 2016). Both Democratic and Republican voters appear to hold these gendered stereotypes, but because these groups differ in their policy preferences and ideological positions, they may endorse women candidates to varying degrees (Sanbonmatsu and Dolan 2009). Indeed, as we will discuss in more detail below, our meta-analysis yields positive effects amongst Democrats but negative effects among Republicans.

Design

Most existing candidate choice experiments that we consider here were not designed specifically to study gender, but nevertheless vary candidate gender as one of the many candidate characteristics included in the description of hypothetical candidates. Our goal is to leverage the randomization of candidate gender in many countries, time periods, and contexts in order to gain a holistic understanding of the effects of gender on vote choice. We attempted to collect all candidate choice experiments ever conducted and described in academic papers, whether published or unpublished. We used two main inclusion criteria:

1. Candidate gender is randomized.
2. The dependent variable is, or can be transformed into, a binary vote choice for or against the candidate.

We followed standard practices to locate our studies: Citation chains, internet searches using the terms (“factorial”, “candidate choice”, “voter preference experiment”, “conjoint

experiment”, “gender, vote, experiment”, “vignette”), and word of mouth using social media as well as personal conversations with scholars in the field. In total, we located 42 experiments from 30 papers. In 25 of the 42 cases, we were able to obtain replication data either through private communication or publicly-available repositories. In the remaining 17 cases, we attempted to recover the necessary statistics from the text or graphics of the articles. We did not exclude studies based on the manner in which candidate gender is signaled to the survey respondent. Some studies manipulate gender by indicating “Man” or “Woman”, or “Male” or “Female”, in a matrix of candidate characteristics (e.g., Kirkland and Coppock 2018) while others use pictures (e.g., Crowder-Meyer et al. 2015). We did not limit our data collection to any specific geographic context. While most studies were conducted in the US context, we also include samples from Afghanistan, Argentina, Australia, Brazil, Chile, Japan, Malawi, Switzerland, and the UK. Moreover, studies were included regardless of their sample type. Some use convenience samples like Mechanical Turk (MTurk), Survey Sampling International (SSI), or student samples. Others use samples that are nominally representative of the voting-age population in a given country at the time the study was conducted. We included experiments that used a variety of designs, including standard factorial experiments in which only a few characteristics are varied, highly factorial conjoint experiments in which many characteristics are varied, and vignette experiments which embed manipulations in a larger dose of information about the candidate. Some experiments asked respondents to rate one candidate at a time, others asked respondents to choose between two at a time. We excluded several excellent studies that randomized gender but measured favorability or perceptions of competence instead of vote choice. Overall, our database of studies includes 42 experiments from six continents across three and a half decades. Table 1 provides an overview the studies used in our analysis.

Our main focus will be a meta-analysis of the average treatment effect (ATE) estimates of being a woman candidate (versus a man) in each study. These ATEs are typically *sample*

Table 1: Study Manifest

	N subjects	N ratings	Raw Data	Sample Type
Aguilar et al. (2015), Sao Paulo	608	608	Yes	convenience
Bansak et al. (2018), USA - MTurk	2,411	144,494	Yes	convenience
Bansak et al. (2018), USA - SSI	643	38,482	Yes	convenience
Campbell et al. (2016), UK Frequency of MP Dissent	1,899	18,990	Yes	representative
Campbell et al. (2016), UK Type of MP Dissent	1,919	19,190	Yes	representative
Carnes and Lupu (2016), Argentina	1,149	2,298	Yes	representative
Carnes and Lupu (2016), UK	5,548	11,096	Yes	representative
Carnes and Lupu (2016), USA	1,000	2,000	Yes	representative
Clayton et al. (2019), Malawi	604	3,624	Yes	representative
Eggers et al. (2018), UK	1,367	2,806	Yes	representative
Hainmueller et al. (2014), USA	311	3,466	Yes	convenience
Henderson et al. (2019), USA, CCES	2,791	22,328	Yes	representative
Holman et al. (2016), USA	1,001	1,001	Yes	representative
Hopkins (2014), USA	551	7,714	Yes	representative
Kirkland and Coppock (2017), USA - MTurk	1,204	12,032	Yes	convenience
Kirkland and Coppock (2017), USA - YouGov	1,200	11,432	Yes	representative
Mo (2015), Florida	407	5,700	Yes	convenience
Saha and Weeks (2019), DLABSS 1	551	3,280	Yes	convenience
Saha and Weeks (2019), UK, Prolific	869	8,682	Yes	convenience
Saha and Weeks (2019), USA, DLABSS 2	497	4,886	Yes	convenience
Saha and Weeks (2019), USA, SSI	1,248	7,480	Yes	representative
Sen (2017), USA, SSI 1	798	4,797	Yes	convenience
Sen (2017), USA, SSI 2	763	4,592	Yes	convenience
Teele et al. (2018), USA	1,052	6,312	Yes	representative
Visconti (2018), Chile	210	3,360	Yes	convenience
Armendariz et al. (2018), USA	1,495	2,990	No	convenience
Atkeson and Hamel (2018), USA	1,500	3,000	No	convenience
Bermeo and Bhatia (2017), Afghanistan	2,485	7,455	No	representative
Crowder-Meyer et al. (2015), MTurk	430	1,290	No	convenience
Crowder-Meyer et al. (2015), UC Merced	350	1,050	No	student
Fox and Smith (1998), UCSB	650	2,600	No	student
Fox and Smith (1998), University of Wyoming	990	3,960	No	student
Horiuchi et al. (2017), Japan	2,200	22,000	No	convenience
Kage et al. (2018), Japan	1,611	9,666	No	representative
Kang et al. (2018), Australia	2,290	4,580	No	representative
Ono and Burden (2018), USA, SSI	1,583	15,830	No	representative
Piliavin (1987), USA	245	245	No	student
Sigelman and Sigelman, (1982), USA	227	227	No	student
Tomz and Van Houweling (2016), USA	4,200	25,200	No	representative
Vivyan and Wagner (2015), UK, YouGov - 2012	1,899	1,899	No	representative
Vivyan and Wagner (2015), UK, YouGov - 2013	1,919	1,919	No	representative
Wuest and Pontusson (2017), Switzerland	4,500	9,000	No	representative
Total	64,474	503,835	25	

average treatment effects (SATEs), though some studies target *population* average treatment effects (PATEs), either by using a probability sampling scheme or poststratification weights. The ATE in conjoint experiments is usually referred to as the average marginal component effect (Hainmueller et al. 2014, AMCE,). Describing an ATE as an AMCE emphasizes that the estimand itself depends on the distribution of the other candidate attributes included in the study. For the remainder of the paper we will refer to all of these (SATEs, PATEs, and AMCEs) as ATEs.

Because we require candidate gender to be randomized, the difference-in-means will be an unbiased estimator of the ATE in each case. Where the raw data are available, we estimate robust standard errors and 95% confidence intervals using the `estimatr` package for R (Blair et al. 2018). We include sampling weights when provided by the original researchers in their replication datasets. When subjects rate multiple candidate profiles, we follow standard practice the analysis of conjoint experiments and cluster our standard errors by respondent (Hainmueller et al. 2014). Where raw data were not available, we searched the original publications for estimates of the ATE as well as uncertainty estimates. Occasionally, this process involved digitally measuring coefficient plots for both point estimates and 95% confidence intervals.⁴

Our second analysis will present estimates of the Conditional Average Treatment Effect (CATE) of candidate gender depending on other (randomly assigned) candidate characteristics. For example, to estimate the CATE given that candidates are black, we condition the dataset to only include black candidates, then estimate the difference-in-means using the same procedure described above. We estimate CATEs for all candidate dimensions for which we have data. These dimensions are overlapping, but we do not estimate CATEs in the *intersection* of candidate characteristics (e.g., among 55-year-old Democratic former

⁴In the Supplementary Materials, we show that this procedure yields accurate measurements by comparing digital measurement with direct computation.

police officers) because we run out of data too quickly.

Our third and final analysis estimates the CATE of candidate gender conditional on respondent characteristics. Because the space of possible respondent characteristics is very large, we limit ourselves to those respondent characteristics that have emerged as most salient in previous literature: respondent gender and (in the US) respondent partisanship.

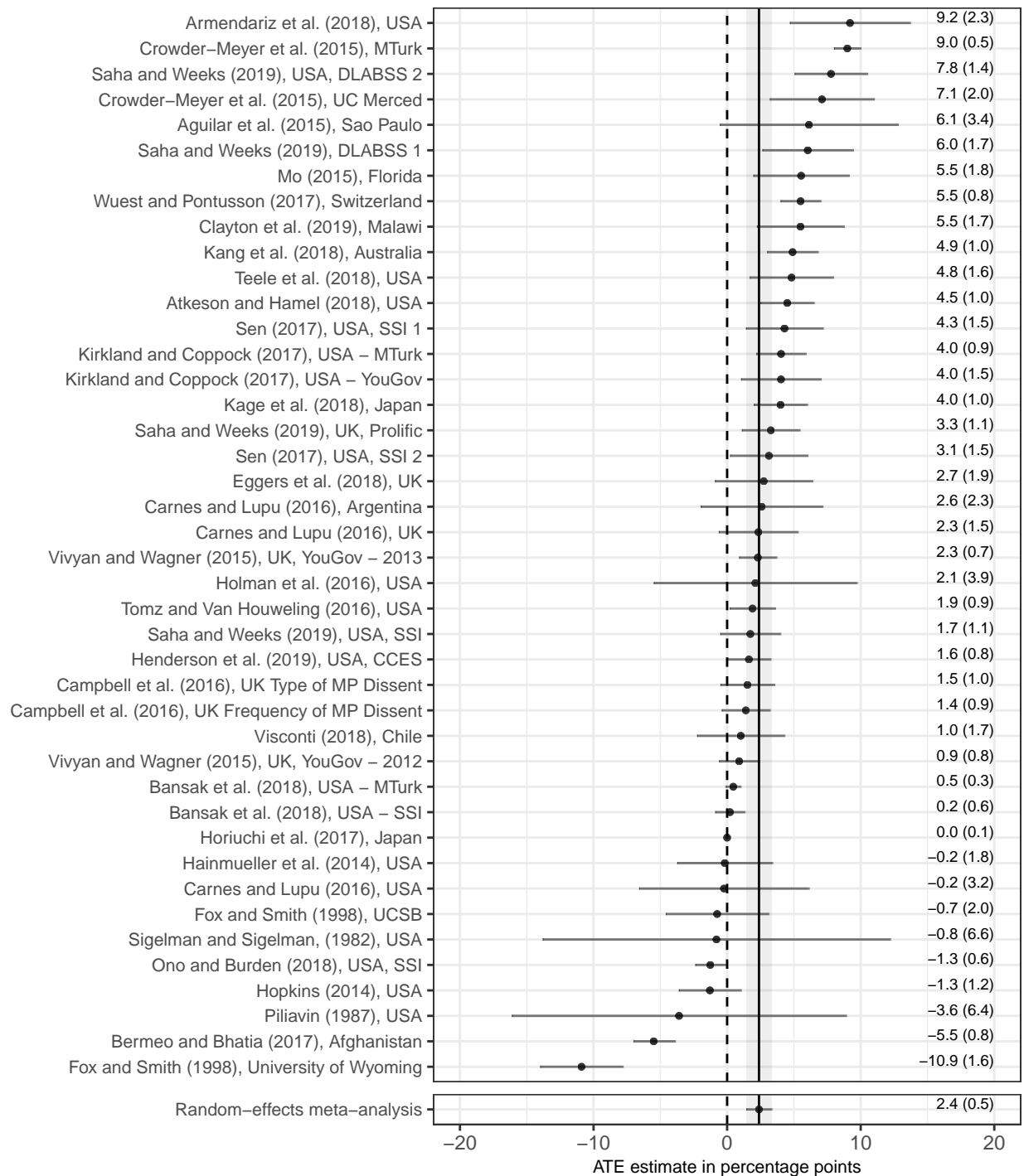
When averaging across studies, we employ random-effects meta-analysis. Random-effects (rather than fixed-effects) is appropriate in this setting because we do not assume that the true average effect of gender is exactly the same across contexts. Instead, we assume that these effects vary from context-to-context, but are nevertheless drawn from a common distribution. The estimand in the random-effects meta analysis is the expectation (or average) of this distribution.

Results

Main Finding: Positive Electoral Effects for Women

Our main result is presented in Figure 1. Using random-effects meta-analysis, the average ATE is 2.4 percentage points, with a confidence interval stretching from 1.5 to 3.4 points. We see a very consistent pattern in favor of women candidates: 34 estimates are positive and 9 are negative. Of these nine, only three are statistically significant: one conducted at the University of Wyoming in 1998 (Fox and Smith 1998), a second conducted in Afghanistan in 2017 (Bermeo and Bhatia 2017), and a third conducted on an SSI sample of Americans (Ono and Burden 2018)). Of the 42 experiments, 23 show statistically significant positive results and 16 produce estimates that cannot be distinguished from zero. While there are some exceptions and some very imprecise estimates, the results of these studies indicate an overall positive effect of being a woman on candidate support.

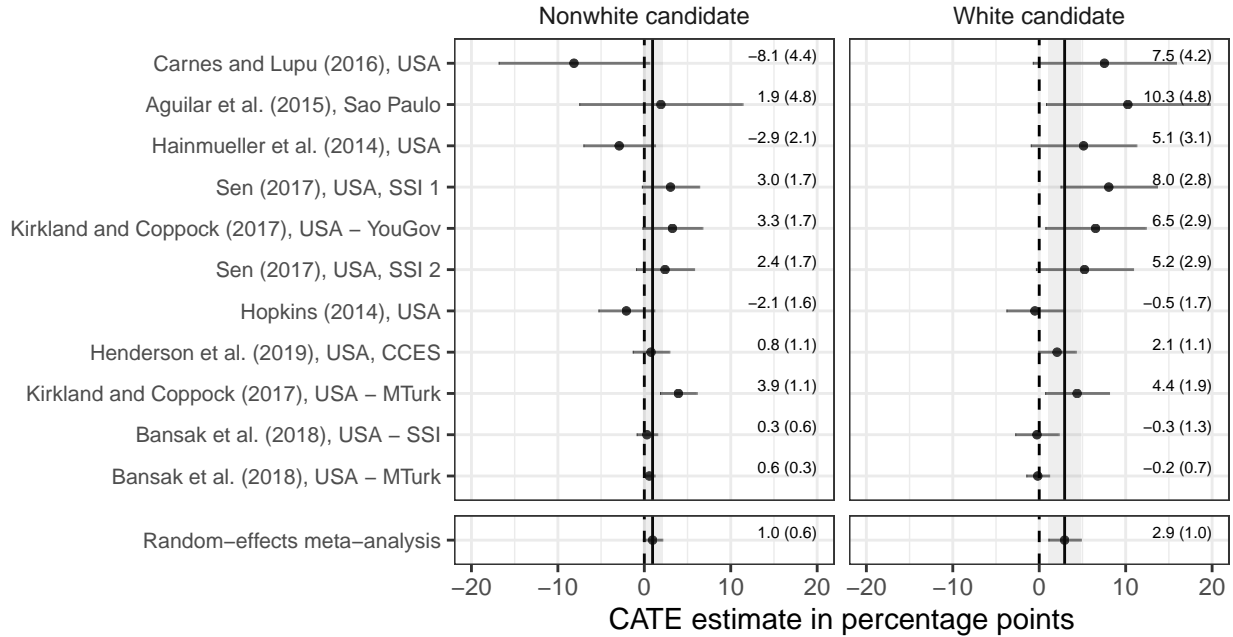
Figure 1: Results of 42 Candidate Choice Experiments on the Effect of Candidate Gender



Effects Conditional on Candidate Characteristics

Most of the studies in our sample randomized other candidate features beyond gender, allowing us to study whether the positive effects we observe on average hold for candidates of different parties, ages, races, professions, marital status, or political experiences, among other attributes. In the supplementary materials, we show 535 separate conditional average treatment effects, the vast majority of which are positive. Here we focus on candidate race, since we have a large number of studies over which to pool (Aguilar et al. 2015; Carnes and Lupu 2016; Hainmueller et al. 2014; Henderson et al. 2019; Hopkins 2014; Kirkland and Coppock 2018; Sen 2017). As shown in Figure 2, the effects are slightly larger among white candidates (2.9 percentage points) than nonwhite candidates (1 point), but the difference between these two estimates is not statistically significant ($p = 0.076$). This provides modest support for intersectional work that candidate gender may have differential effects on vote choice, depending on candidate race.

Figure 2: Conditional Average Effect of Candidate Gender, Conditional on Candidate Race

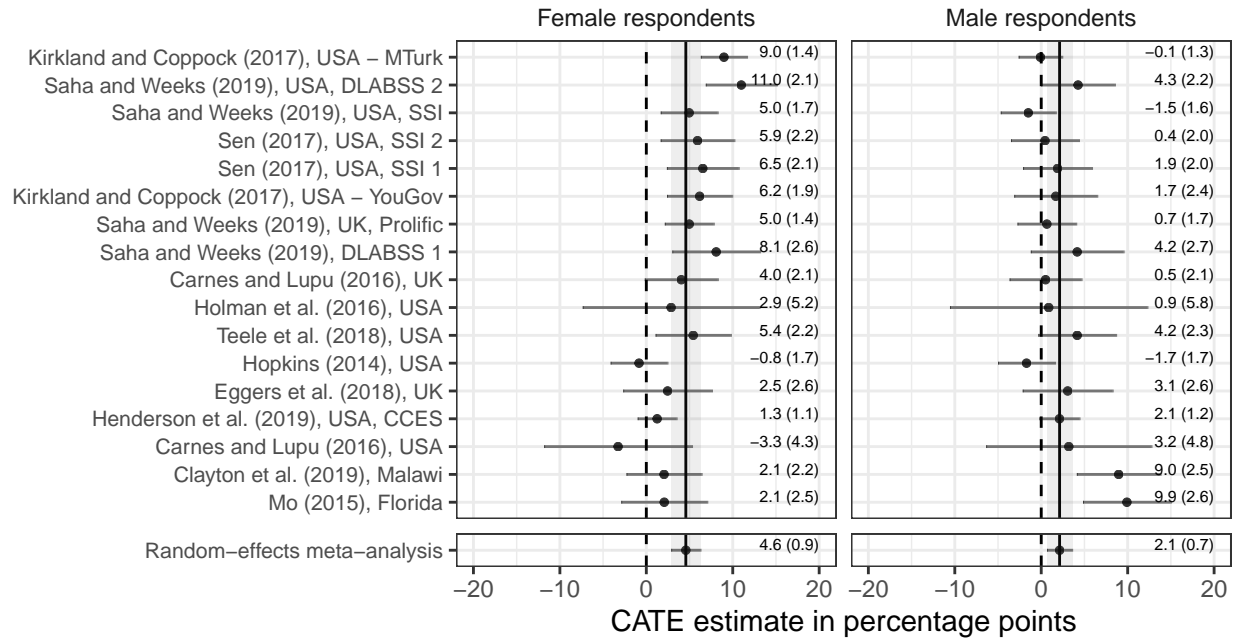


Effects Conditional on Respondent Characteristics

Lastly, we consider the effects of gender, conditional on the respondent characteristics, in particular by gender and partisanship affiliations. Turning first to the *gender affinity hypothesis* discussed earlier, Figure 3(a) shows the CATEs of candidate gender, conditional on respondent gender. The effect is positive for both groups: 4.6 points among women and 2.1 points among men. Difference between the two estimates is itself statistically significant ($p = 0.032$).

In Figure 3(b), we summarize the results of 15 studies conducted in the US context, for which we were able access raw data and for which partisan identification of respondents was available. The effect is negative among Republicans (-1.7 points, SE: 0.6 points) but +5 percentage points for both Democrats and Independents. The Republican estimate is statistically significantly different from the Democratic and Independent estimates. These estimates by party underline a general difficulty in interpretation. The differential effects could represent a gender heuristic whereby people infer the sorts of policies women are likely to pursue when elected, or they could reflect a taste-based preference for women. Yet, even when disaggregating by party, we cannot disentangle the two mechanisms because Democrats may both prefer the sorts of policies typically championed by women and also prefer women on taste-based grounds.

(a) Respondent Gender



(b) Respondent Partisanship

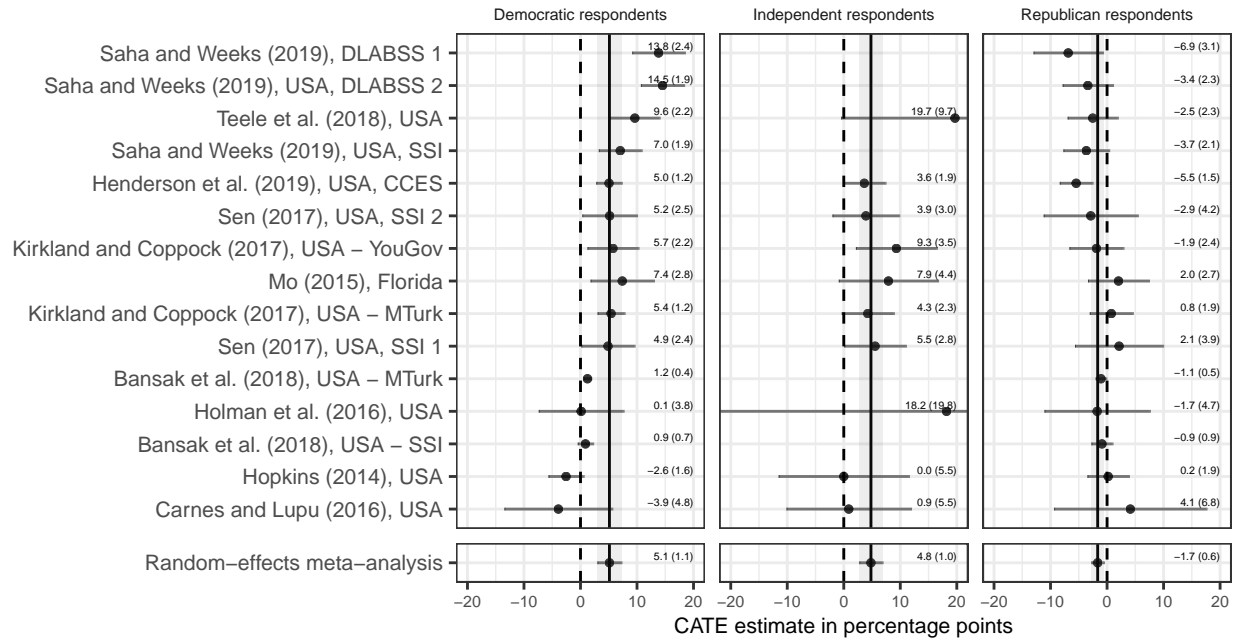


Figure 3: Conditional Average Treatment Effects of Candidate Gender, by Respondent Characteristics

Discussion

We have summarized the statistical evidence from 42 candidate choice experiments on gender. Our main finding is that the average effect of being a woman candidate is a 2 percentage point average increase in support. We observe considerable study-to-study variation, though more than three-fourths of the studies show a positive effect.

We further investigated whether these average effects mask important heterogeneities. We find some evidence that the effect is stronger among white candidates than among non-white candidates. However, on the whole, our results do not depend on other candidate characteristics (such as experience, age, or occupation) as we detail in the supplementary materials (see Figures A.2 through A.26). Therefore, in line with Teele et al. (2018), our findings do not support the hypothesis that voters systematically apply double standards when they evaluate women candidates.

We found some interactions of candidate gender with respondent characteristics, however. While the effect is positive for both men and women respondents, it is somewhat larger among women, lending some support to the gender affinity hypothesis. We also observed a stronger effect among Democrats and Independents compared with Republicans, for whom the average effect is in fact negative. It is unclear, however, whether this difference is due to a gender heuristic whereby partisans infer the sorts of policies women are likely to pursue when elected, or whether it arises from a taste-based preference among Democrats and Independents for women candidates in general.

Overall, our findings offer evidence against demand-side explanations of the gender gap in politics. Rather than discriminating against women who run for office, voters on average appear to reward women. What then explains the persistent gender gap in politics across the globe? For us, the findings we discussed here suggest that supply side factors that include party structures, donor preferences, candidate recruitment, and differences in

opportunity costs are correctly coming under deeper scrutiny by political scientists (e.g., Crowder-Meyer 2013; Lawless and Fox 2010; Silbermann 2015; Preece et al. 2016; Thomsen and Swers 2017). Of course, evaluating the causal influence of such supply side factors on women’s representation is inherently more difficult as candidate selection is a complex, often opaque process. Nevertheless, some recent scholarship has made important progress in this area. Foos and Gilardi (2019) shows that a randomized invitation to meet with women politicians did not increase self-reported political ambition among female university students in Switzerland. Karpowitz et al. (2017) randomly induced leaders of precinct level caucus meetings to read statements encouraging their membership to elect more women delegates to the statewide convention, increasing the fraction of precincts electing at least one woman by more than five percentage points. We hope that future work will continue to push forward this promising research agenda.

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