How Descriptive Representation Increases Labor Market Participation *

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Abstract

Do the positive effects of descriptive representation expand beyond political outcomes? We ask whether the perception that government includes "people who look like you" can affect more everyday outcomes, such as investment in the future. We experimentally demonstrate that women are more likely to apply to jobs when they believe there are more women in Congress. The mechanism varies according to feelings of marginalization, which are clustered by partisanship–Democratic women feel significantly more marginalized than Republicans. Democrats update their beliefs about discrimination against women in response to treatment, while Republicans feel more empowered when they believe that Congress includes more women. We show that there is no countervailing effect among men; in fact, men are significantly more willing to apply to certain jobs when they perceive that there are more women in Congress and that this is an achievement. Our findings have implications for the importance of descriptive representation.

Word Count: 9,962

How can diverse societies protect equality of opportunity? Political inclusion along identity lines, such as race and gender, is advocated as part of the solution. We know that descriptive representation–being represented by an elected official who shares one's social identity–fosters political trust, participation, legitimacy, and efficacy, particularly among groups that have been historically marginalized (Lijphart, 1977; Bratton and Ray, 2002; Reynolds, 2013; Pitkin, 1967; Schwindt-Bayer and Mishler, 2005; Bobo and Gilliam, 1990; Fenno, 1978; Sanchez and Morin, 2011; Gay, 2002; West, 2017; O'Brien, Clayton and Piscopo, 2019; Ladam, Harden and Windett, 2018). But, given the visibility of governmental institutions and those that serve as representatives within them, does descriptive representation also send important signals to individuals about their place in society?

Social psychologists have shown that variation in feelings of "belonging" resulting from representation (or lack there of) in educational and professional settings can have important effects on performance (Walton et al., 2014). It has also been demonstrated that stereotype threat–whereby individuals internalize negative stereotypes that others hold about them–can negatively impact individuals' academic and professional success (Gresky et al., 2005). Similarly, the political science literature has long theorized that being represented by "people who look like you" brings about a sense of "empowerment" (Bobo and Gilliam, 1990; Mansbridge, 1999; Gilliam, 1996), which perhaps underlies the empirical finding that descriptive representation increases political ambition (Beaman et al., 2012; Ladam, Harden and Windett, 2018). Further, symbolic representation–where descriptive representation sends important signals to individuals about society and their place within it–is highlighted as important in integrated models of representation (Schwindt-Bayer and Mishler, 2005).

In light of these findings from various disciplines, it is possible that descriptive political representation could alleviate pernicious effects of historical marginalization, such as stereotype threat and expectations of discrimination, that otherwise hamper the economic welfare of his-

torically excluded groups. In particular, descriptive representation might work through two well-established theoretical mechanisms to change individuals' attitudes and behaviors. First, it might increase expectations of *substantive representation*, changing individuals' beliefs about the likelihood of being institutionally protected from discrimination in the future. Second, descriptive representation could increase *symbolic representation*, which could have two effects. First, individuals might receive a signal about the nature of discriminatory attitudes against people like them when someone from their group is *popularly* elected. Second, seeing "someone like you" in government might increase one's sense of *empowerment* through a role-model effect. If individuals' perceptions of whether there are "people like them" in government has any of these hypothesized effects, then it may also have a positive impact on basic welfare-enhancing behaviors, such as labor market participation. In fact, we know that there is a strong relationship between a group's participation in the labor market and their political representation (Iversen and Rosenbluth, 2008). Yet, to date, there is little direct empirical evidence exploring whether perceptions of being descriptively represented alters individual-level attitudes, beliefs and behaviors in ways that enhance economic welfare.

We break new ground in exploring these effects. By experimentally manipulating individuals' perceptions of representation in U.S. Congress, we show that when members of a large, historically marginalized group believe that there are more "people like them" in government, they are more likely to apply to jobs, an important first step to entering the labor market.

We also show that the mechanism underlying this finding varies according to pre-treatment feelings of marginalization. Individuals who are prone to feeling marginalized respond to treatment by lowering their expectations of discrimination, and are in turn more willing to apply to jobs that are group-stereotyped or are otherwise seen as potentially exclusionary. Individuals who have relatively lower baseline feelings of marginalization do not update their already-low expectations of discrimination in response to treatment. Instead, treatment both increases these

individuals' sense of empowerment as well as their willingness to apply to *all* types of jobs, not just those that are seen as discriminatory.

While it is important to understand the positive effects of further inclusion among members of historically marginalized groups, we believe it is also important to consider how such shifts in the status quo might impact members of historically privileged groups. As such, in a second experimental study, we should that, under some circumstances, increasing perceptions of inclusion of historically marginalized groups can also increase labor market participation among members of an historically privileged group. As such, we do not find any evidence of a negative "backlash" effect among members of an historically privileged group according to shifts in the status quo of representation.

These findings are particularly relevant to the current push throughout many democracies for further racial, ethnic, religious, and gendered inclusion.

1 Theoretical Motivation for Experiments

Descriptive representation is shown to be crucial in supporting the principles of democracy. When it comes to institutions, citizens are more willing to accept political decisions made by a descriptively representative body (Arnesen and Peters, 2017; O'Brien, Clayton and Piscopo, 2019), and they are more likely to trust and view these institutions as responsive (Pitkin, 1967; Bobo and Gilliam, 1990; West, 2017; Fenno, 1978; Sanchez and Morin, 2011). Further, constituents are more likely to vote, contact elected officials, and even run for office themselves, when people who share their identities hold office (Gay, 2002; Broockman, 2014; Ladam, Harden and Windett, 2018; Beaman et al., 2012). This is perhaps because they feel symbolically represented (Schwindt-Bayer and Mishler, 2005; Gay, 2002; Hayes and Hibbing, 2017). In the face of this strong emphasis on political inclusion, there is shockingly little evidence testing the effects of descriptive representation on individuals' basic, intermediary (non-political) behaviors, such

as exhibiting trust in out-group members, or willingness to invest in the future.

However, other social science research supports the idea that representation might lead to welfare-enhancing behavior that goes beyond the political outcomes cited above. Social psychologists have shown that historically unprecedented elections of people from discriminated-against groups, such as President Obama's election in 2008, can serve to counteract the pernicious effects of stereotype threat (Marx, Ko and Friedman, 2009). And, importantly, the effects of stereotype threat have been proven to affect economic outcomes, such as career aspirations and performance (Casad and Bryant, 2016; Hoff and Pandey, 2006). Further, "role-models" have been shown to successfully counteract these negative effects of stereotype threat on economic performance (McIntyre et al., 2010). In terms of politics, female leadership has been demonstrated to increase political ambition among other women (Campbell and Wolbrecht, 2006; Beaman et al., 2012). Thus, one way that descriptive representation might have basic welfare-enhancing effects is by helping members of historically marginalized groups overcome stereotype threat, thereby allowing them to consider applying to jobs for which they previously felt unqualified.

In addition to social psychological evidence on the importance of role models in overcoming stereotype threat, economics and labor research demonstrates the importance of group identities in determining economic behavior (Akerlof and Kranton, 2010). Individuals from historically marginalized identities are less likely to see themselves as valuable and apply to jobs because they believe that they are not sufficiently qualified and / or are averse to competition (Orazem, Werbel and McElroy, 2003; Niederle and Vesterlund, 2007; Azmat and Petrongolo, 2014). In light of this, another mechanism by which descriptive representation could increase labor market participation is by lowering expectations of discrimination against "people like you."

Alternatively, if individuals select out of the labor market or certain sectors due to anticipation of discrimination, then descriptive political representation might reduce these anticipatory effects by increasing individuals' expectations of protection from such discrimination. Being

represented by people from one's group may cause individuals to update beliefs about the types of anti-discrimination laws that might get passed or enforced. Existing evidence demonstrating the translation of descriptive into substantive representation suggests that individuals' would not be illogical to expect such shifts in policy (Kittilson, 2008).

It stands to reason that *political* descriptive representation may do more than lead to increased trust in government and political engagement. In particular, it may change attitudes and beliefs such that when members of historically marginalized groups believe themselves to be more politically represented, they are more willing to apply to jobs. This outcome is of particular interest given that members of marginalized groups persistently and historically trail behind members of privileged groups when it comes to labor market participation (Blau and Kahn, 2013; Antecol, 2000), perhaps in part due to discrimination and expectations of such discrimination (Bertrand and Mullainathan, 2004).

We hypothesize **three mechanisms** that may explain a positive effect of one's beliefs about being descriptively represented on likelihood of applying to jobs. The first mechanism involves the translation of descriptive representation into *substantive representation*. It is possible that individuals from historically marginalized groups expect newly-elected, descriptively representative officials to pass legislation that will protect people from their group against discrimination.

The second and third mechanisms involve *symbolic representation*. Members of historically marginalized groups may use the election of people from their group as a signal about the levels of discriminatory attitudes among voters and thus society more generally. This mechanism applies a specific conceptualization of *symbolic representation*, where something *visible* represents something *invisible*. This theoretical expectation is supported by existing empirical evidence showing that elected officials from historically marginalized groups can serve to break down stereotypes in society (Chauchard, 2014; Goldman and Mutz, 2014; Haynes and Block, 2019).

It is also possible that when members of historically marginalized identities see people from

their group get elected they experience a psychological sense of "empowerment" (Mansbridge, 1999; Bobo and Gilliam, 1990; Gilliam, 1996; Gilliam and Kaufmann, 1998). This mechanism is consistent with previously cited social psychological evidence showing that representation can help members of historically marginalized groups overcome stereotype threat. Further, there is evidence of "role model effects" surrounding *political* representation specifically (Ladam, Harden and Windett, 2018; Beaman et al., 2012). However, this previous work has focused solely on the effect of descriptive representation on *political* ambition; thus, we extend the same mechanism to other, more every-day or immediate outcomes.

The above theoretical framework leads to the following hypotheses:[1]

H_1: Perceptions of increased descriptive representation will increase the willingness of members of an historically marginalized group (e.g. women) to enter the labor market.

H_2: Among members of historically marginalized groups, perceptions of increased descriptive representation will increase the expectation of institutional protections against discrimination from future employers.

H_3: Among members of historically marginalized groups, perceptions of increased descriptive representation will decrease individuals' expectations about levels of discrimination against them in society, and thus will lead to a decrease in expectations of discrimination from future employers.

H_4: Among members of historically marginalized groups, perceptions of increased descriptive representation will lead to a sense of empowerment.

We expect that each of the above hypotheses is most likely to apply to individuals who are engaged in politics, since they would be aware of political representation in ways that facilitate mechanisms in H2-H4. Data from the American National Election Studies (2016) shows a strong correlation between associating oneself with one of the two major parties in the U.S. and being relatively more engaged in politics. Thus, we expect that partisans will be more affected by beliefs about Congressional representation than non-partisans or those who identify as Independent

[1]Please refer to our pre-registration for a comprehensive list of all hypotheses (some of which are tested with evidence in the appendix, but these are referenced as such throughout the discussion of results).

or third party. Second, we expect that underlying beliefs about discrimination will moderate the effects hypothesized in H2 and H3, such that higher baseline feelings of marginalization increase the salience of these hypothesized effects. Given our empirical focus on women, we note that many such attitudes about women's discrimination and traditional gender roles are clustered within the Democratic and Republican parties. Given this clustering by party, we expect that perceptions of being represented by "people like you" will have differential effects on Democratic versus Republican women. Further, given our empirical focus on U.S. Congressional representation, it is important to note that, among the 126 women who now serve in Congress, more than 80% of them are Democrats, which further establishes our expectation that hypothesized effects might be moderated by partisanship.

We consider the following scope conditions. Hypothesis 2 most strictly applies to political representation; specifically to representation that can readily influence anti-discrimination policy. However, we note that analogous effects might be found in terms of representation in other sectors (e.g. more women in senior positions at a law firm might lead to increased expectations of policies that protect women within the firm). Our second and third mechanisms may also apply to non-political forms of representation. Our hypothesized effects on expectations of discriminatory attitudes (H3) may apply to other visible forms of representation, particularly those that embody a majority decision or consensus. When it comes to a role-model effect, we expect that this could come from any type of highly visible position, such as CEOs of Fortune 500 companies. Thus, our findings may generalize beyond the scope of political representation. It is nonetheless critical that we understand how *political* inclusion may affect individuals from historically marginalized groups in ways that are likely to have a profound impact on their overall welfare.

Finally, while the above discussion builds a theoretical foundation for our experimental investigation, it is also important to consider how shifts in the status quo might affect beliefs

and behaviors of members of historically privileged groups. Extant literature provides less clear theoretical expectations when it comes to the effects of loss of status. In our empirical case of gendered representation in US Congress, men could lose confidence or a sense of efficacy due to loss of representation, or they could be motivated by a "backlash" effect (Enos, 2015; Abrajano and Hajnal, 2015) whereby they act out against increased women's representation. In both cases we might expect men's labor market participation to decrease in response to increases in women's political representation. On the other hand, it is possible that at least some men are empowered by or otherwise positively affected by women's increased representation. In either case, it is important to consider how shifts in the status quo of political representation affect not only members of newly included groups, but also members of groups who have been historically over-represented. Therefore, while our primary focus is on women's reactions to descriptive representation, we also seek to understand how shifts in the nature of representation affect men.

2 Empirical Motivation for Experiments

We first use descriptive empirical evidence to investigate the nature of the relationship between women's Congressional representation and their labor market participation in the United States. Table 1 shows how the gap between women and men's employment rates narrows within a state when women's percentage of Congressional representatives from that state increases.[2] Using variation within states across 20 years, Table 1 shows that as a state elects more women, the difference between women and men's employment rates (which is always negative, i.e. men's participation is always higher) gets closer to zero.

However, this association likely demonstrates many underlying relationships, and thus does not provide evidence for the effect of increased descriptive representation on labor market par-

[2]To construct our independent variable, we collected data on the gender of Members of Congress from each of the 50 states covering the time period of 1998-2018. To construct our dependent variable, we use data from the Department of Labor's website which provides employment levels among certain groups within a state (i.e. women and men) over the same time period.

Table 1: Increasing percent women in Congress from a state (using data from 1999-2018) is associated with a narrowing of employment gender gap

	(1) Pct of Pop. Women - Men	(2) Employed Women - Men
Pct Women Among MoC from a State	0.04***	0.03***
	(0.01)	(0.01)
Employed Population in 100,000		-0.04***
		(0.02)
# MoC from a State		0.03
		(0.07)
Constant	-12.74***	-12.71***
	(0.08)	(0.63)
Observations	1,020	1,020
Adjusted R^2	0.63	0.66
State FE's	Yes	Yes

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. To construct our independent variable, we collected data on the gender of Members of Congress from each of the 50 states (and DC) covering the time period of 1999-2018. To construct our dependent variable, we use data from the Department of Labor's website which provides both population by group, as well as employment levels among certain groups, within a state (i.e. women and men) over the same time period. Thus, since we have data on 50 states over the span of 20 years, there are 1,020 observations in our data. We used state fixed effects in all models in order to control for variation across states. In model 2, we also control for state characteristics that correlate with both our independent and dependent variables over time, such as number of people employed by state and # of Members of Congress from a state (these variables come from data from the Department of Labor's website and Congress.gov, respectively).

ticipation, per se. We are interested in understanding how increased representation changes *individual-level beliefs and behaviors*, which is difficult to capture with aggregate-level trends. Micro-data on labor market decisions, and how individuals make the decision to apply to certain jobs, is scarce.[3] Thus, we take the descriptive evidence provided as empirical motivation for our theory; to test our hypotheses, we run experiments manipulating beliefs about the number of women in U.S. Congress and measure reactions to job profiles in an online job market.

[3]Appendix A shows further results using dependent variables from the US Census micro-data, i.e. pursuing higher education and looking for a job when already employed. The measure that we are more precisely able to construct (pursuing higher education) exhibits a positive and significant correlation with women's Congressional representation. However, both outcomes are rare events, and it is unclear whether we are able to capture our true construct of interest given the data available.

3 Women Study: Experimental Design

3.1 Experimental Sample

We collected online experimental data using a sample of U.S. women over the age of 18 (sourced from Dynata, a large international survey firm). We expected heterogeneity in response to our treatment according to partisanship. Thus, using pre-existing data within Dynata's panel of respondents, we block randomize our treatment within three partisan strata: Democratic women; Republican women; and non-partisan/Independent/other identifying women. We analyze all results within these three strata.

Figure 1 shows descriptive statistics on key demographics within our three partisan samples (black bars), as well as on demographics within these three strata in the target population of U.S. women (gray bars).[4] Target population information comes from an individual-level data set including voter file and wide-ranging consumer data throughout the entire United States (provided by L2 Political). Thus, we are able to calculate relative frequencies among subsets of women by party, allowing us to compare our partisan samples to the same such subsets of women in the United States. We find our sample to be convincing in its representativeness. Thus, as we uncover experimental results, we proceed under the assumption that they likely generalize to our target populations of partisan and non-partisan women in the United States.

[4]See Appendix Table B.3 for frequencies presented in Table format.

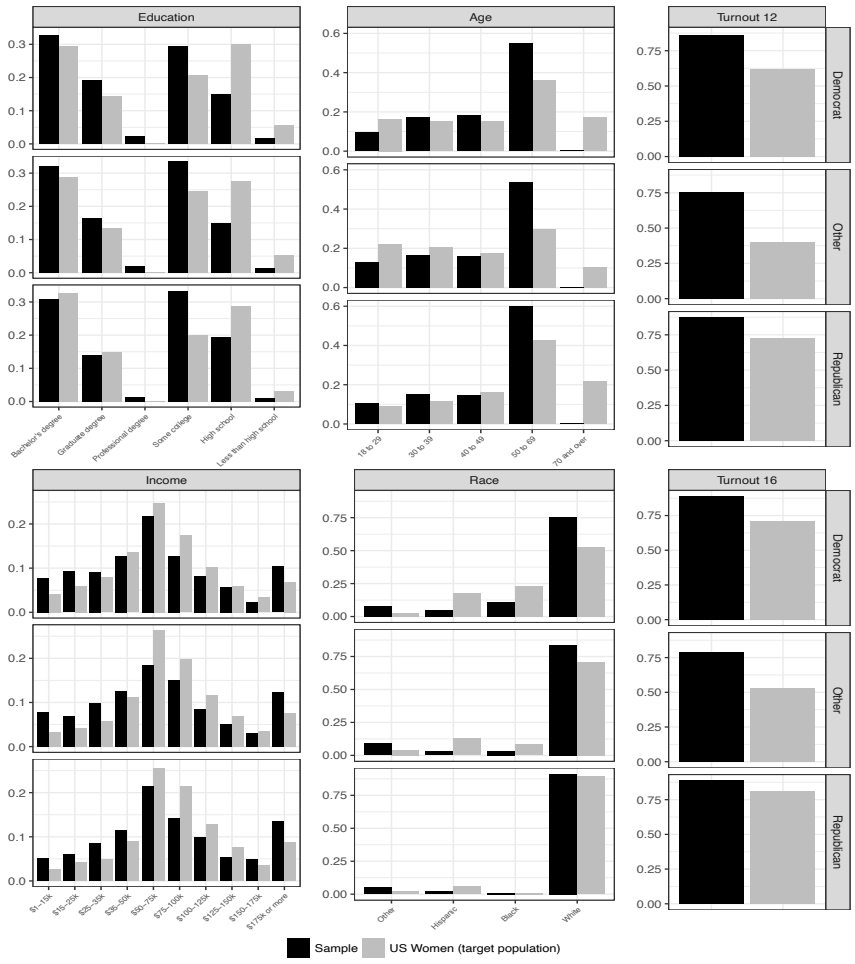

Figure 1: Relative Frequencies in Our sample vs. U.S. Voter File and Consumer Data (from L2 Inc)

3.2 Experimental Setup

Our subjects interacted with an online environment that we created using the Qualtrics Survey platform. Subjects were: shown a consent form; asked to identify their gender (male respondents who were erroneously invited to participate were removed); asked a series of demographic and other pre-treatment questions, some of which primed the fact that the study was about gender; shown information about representation in Congress (including the number of women); shown one of three treatment screens (*no frame*, *negative frame*, or *positive frame*); asked a series of manipulation check and mechanism questions; and shown a screen indicating that the survey in which they just participated was now over and that they should click "Continue" to proceed to the next survey. This "fake end screen" gave our subjects the impression that the current study

had ended and that they were now going to begin a new study.[5]

Having put some cognitive distance between the treatment and our primary outcome of interest, we then asked our subjects to engage with a series of five job profiles, which we modeled after those found on the job search site Monster.com. Subjects were asked to indicate how likely they were to apply to the job, as well as how qualified they felt for the job, on a scale from 0 to 100. The job profiles were defined by four characteristics, the attributes of which were randomized in a conjoint design. The four job characteristics were: 1) the industry (either education or tech); 2) the hierarchical label of the job category (administrative assistant, assistant manager, branch manager, executive assistant or CEO); 3) how competitive the job was (either indicated as among the most competitive on the job site or no information was given); and 4) how high paying the job was (either labeled as among the highest paying or no information was given). The conjoint nature of our primary outcome variable allows us to test for treatment effects on likelihood of applying to jobs that seem particularly discriminatory against women, such as jobs in the male-stereotyped tech industry.[6]

While the most frequently chosen response to our "likely to apply" question is 0, there is still a large amount of variation across the likelihood after that peak at 0.[7] Subjects were instructed that, while they may already have a job, we wanted their honest reactions to job profiles, and so they should read each profile as a hypothetical job they might consider applying to if they were looking for a job. However, many respondents still indicated that, since they already had a job, they would not apply to any of the jobs presented, which lends a certain level of construct validity to the measure.[8] That said, we have sufficient variation in this "likely to apply" outcome in order

[5]Our subjects likely saw this "fake end screen" as authentic and credible given the omnibus nature of the typical survey that such online panelists are accustomed to taking.

[6]We conducted a pre-test where we show that women score the tech industry as highly male-dominated, while they score the education industry as slightly female-dominated. See Appendix Table C.4 for results. Appendix Figure D.2 displays a sample screen shown to our subjects describing a Branch Manager position in the education industry that was labeled as most competitive but not highest paying.

[7]Appendix Figures E.3 and E.4 show the distribution of responses to our two primary outcome measures broken down by partisan subgroups and treatment groups, respectively.

[8]For an in-depth empirical investigation of ecological and construct validity of our data, see Appendix K.

to identify treatment effects. We also have a large amount of variation across our second outcome, how qualified subjects felt. Here the distribution is bi-modal, with a peak at 0 and a peak at 100, which is largely explained by the extreme nature of our five hierarchical job categories–most people felt not qualified for the job of CEO but most felt extremely well-qualified for the job of Administrative Assistant.

In order to manipulate subjects' beliefs about the number of women in Congress, we randomly assign them to one of three conditions, stratifying on three partisan labels. Table 2 shows how subjects are consequently divided among our four experimental conditions. Subjects in the "no information, no frame" condition moved straight from the demographic questions to the manipulation check questions. Subjects in the "no frame," " positive frame," and "negative frame" conditions were shown a preliminary screen with facts about representation in Congress, including that currently 127 women serve in U.S. Congress.[9] Subjects in these three groups then either saw the negative frame or positive frame treatment screen, or they saw no additional screen (no frame). The "negative frame" reiterated that there are 127 women, framing this information in a negative way and depicting the 408 men in Congress with blue stick figures. The "positive frame" reiterated that there are 127 women in Congress, framing this positively and depicting the larger number of women in Congress currently as compared to 20 years ago with pink stick figures. These treatments were designed to be comparable to each other, but to manipulate subjects' *perceptions* of the nature of women's representation in US Congress.

	Democrat	**Other**	**Republican**	
No Information	152	174	139	465
Information, No frame	183	158	157	498
Information, Negative Frame	609	601	602	1812
Information, Positive Frame	592	582	596	1770
	1536	1515	1494	4545

Table 2: Treatment Randomization Across Four Conditions

[9] Appendix Figures F.8-F.10 show the treatment screens. While there are now 126, there were 127 women in Congress at the time of fielding.

3.3 Manipulation Checks

We use two manipulation checks to provide evidence that our treatments successfully: 1) changed women's perceptions that there are more women representing them in U.S. Congress; and 2) changed the valence of women's perceptions of the number of women in Congress from negative (or neutral) to positive. To measure these manipulations, immediately following treatment, we ask subjects 1) for their best guess of the number of women in Congress; and 2) whether the number of women in Congress is an achievement, a reason for concern, or neither.

Given that we did not want our subjects to anchor on priors, instead of eliciting responses to these questions pre-treatment and comparing answers within-subject to post-treatment responses, we assigned 465 subjects to a "no information" condition. Since subjects were randomly assigned to each of our conditions, we use the mean responses to our manipulation check questions among this "no information" group as an approximation of the prior beliefs and perceptions among subjects in our other three treatment conditions. Figure 2 shows the distributions of responses to our first manipulation check question, subjects' guess of the number of women in Congress, across our four experimental groups.

In the "no information" condition, women's prior beliefs about the number of women in Congress are dispersed uniformly around the accurate number of 127, and there are no significant differences across the three partisan subgroups. Comparing the distribution of these priors to those in the "no frame" condition (where subjects' received information about Congress, including that there are 127 women in Congress), we see that the guesses become significantly more accurate; Figure 2 clearly shows that the modal response is now accurate at 127. Comparing these responses in the "no frame" condition to those in the "negative frame" condition, we see that accuracy stays about the same. Importantly, subjects in the positive frame are significantly more accurate than those in the "no frame" and "negative frame" conditions. Furthermore, the mean guess in the positive frame condition is significantly higher than in the negative and "no frame" conditions, and this holds across all three partisan strata (see Appendix Figure G.11 for comparisons of means by treatment condition).

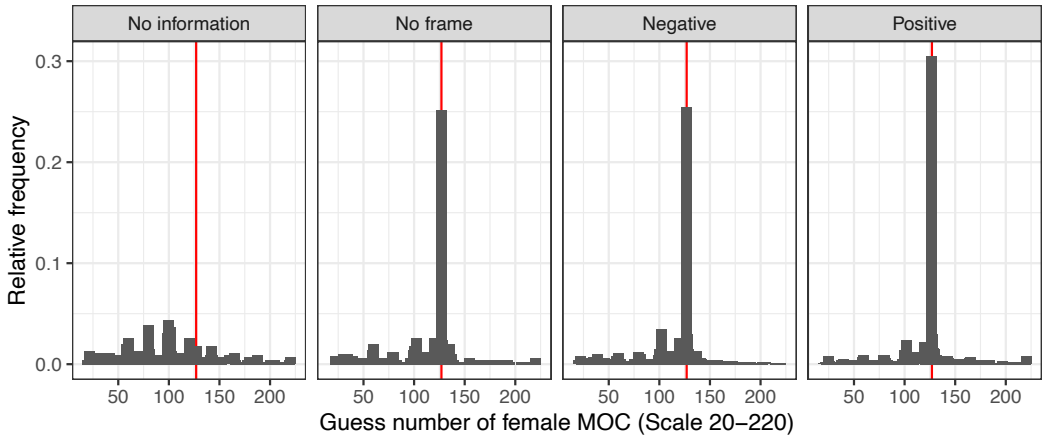

Figure 2: Distribution of Guesses of the Number of Women in Congress by Treatment Condition

Thus, without using deception, we successfully altered subjects' *perceptions* about the number of women who represent them in Congress. That is, perceptions of being represented by "people like you" are higher in the "positive frame" condition than in the "negative frame" condition. Therefore, we compare these two groups on our primary outcomes of interest with confidence that our treatments manipulated our explanatory construct of interest across these two groups. While guesses of the number of women in Congress in the "positive frame" are also significantly higher than those in the "no frame" condition, we use the "negative frame" subjects as our relevant comparison group because they were shown a comparable treatment screen to that of our treated "positive frame" subjects; however, all of our findings are replicated showing the effects as compared to the "no frame" subjects in Appendix M; our preferred analysis of the "no frame" subjects explores ecological validity of our results, see Appendix K for a full discussion.

In addition to this first manipulation check, we also ask subjects whether the number of women currently serving in Congress is an achievement or a reason for concern (or neither, see Figure 3). Subjects in the positive frame are significantly *less* likely to say that the number of women currently serving in Congress is a "reason for concern" and significantly *more* likely to say that it is "an achievement" relative to both the "negative frame" and "no frame" subjects ($p < .01$ in a difference-in-proportions test). These significant differences provide additional evidence that we successfully manipulated perceptions of the valence of current levels of women's representation. It is also important to note that, as expected, there are baseline differences in response to this question by partisanship. Republican women are significantly more likely than Democratic women to say that the number of women in Congress is neither an achievement nor a reason for concern ($p < .01$). This is confirmatory evidence for our expectation that there

are important differences in baseline feelings of marginalization, and that these differences are clustered by partisanship.

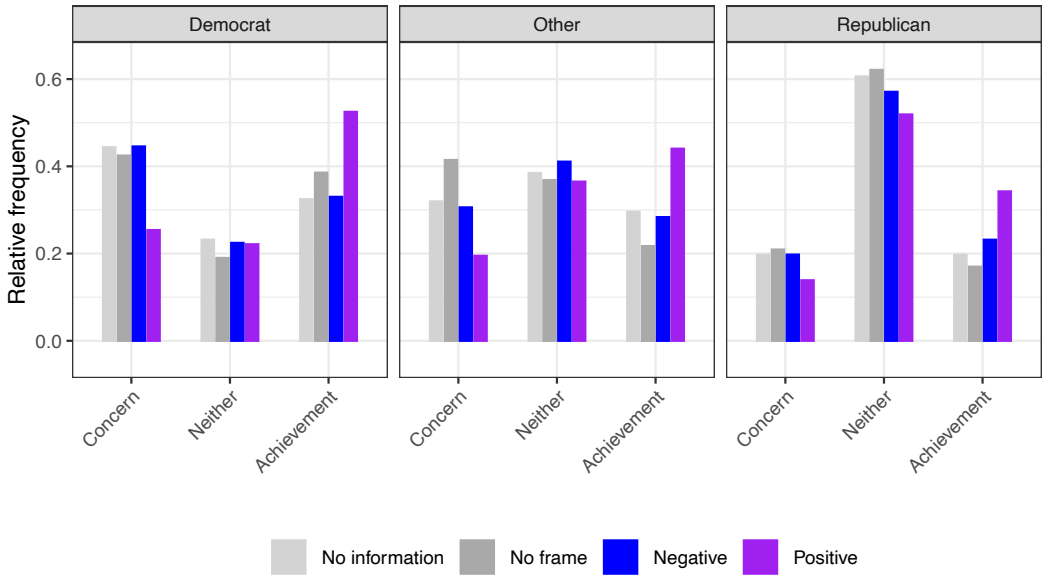

Figure 3: Distribution of Valence Towards # of Women in Congress by Treatment Condition, by Treatment

4 Women Study Experimental Results

Recall that our primary outcome of interest is a question about how *likely a subject is to apply* to a given job profile. Also recall that the job profiles presented to subjects are comprised of four characteristics, the attributes of which were randomized in a conjoint design. Figure 4 shows the grand average treatment effect on our primary outcome measure, likelihood of applying to a job. The grand average treatment effect is calculated over all attributes in the job profiles, and the difference-in-means (between positive and negative frame subjects) are plotted according to partisanship.[10]

Figure 4 shows that, among both Democratic and Republican women, the positive frame treatment, relative to the negative frame treatment, increases subjects' likelihood of applying to jobs. The average willingness to apply to any given job profile is higher among those partisan women who were experimentally manipulated such that they hold significantly higher beliefs about the number of women in Congress, and have a significantly more positive valence towards

[10]When estimating standard errors we cluster at the subject level given that each subject saw five job profiles and assume that the frame treatment is part of the fully factorial conjoint design. We discuss the robustness of this estimation in Appendix Section E.

this representation. This positive effect is significant among Republican women. There is a clear null effect among Independents, non-partisans and/or other identifying women. This confirms our pre-registered hypotheses, which stipulated that the treatment effects were likely to be most salient among those individuals who are politically engaged, where identifying with one of the two major U.S. parties is a strong predictor of political engagement.[11] In light of this, the remaining presentation of results focuses on Democratic and Republican women only (see Appendix L for results on Independents/Others/Non-Partisans).

We now analyze treatment effects by computing marginal means of our outcomes for each job attribute (Leeper, Hobolt and Tilley, 2019), and then taking the difference in marginal means for a given attribute between treatment groups.This allows us to identify treatment effects on subjects' willingness to apply to certain types of jobs. Figure 5 demonstrates that treatment affects the likelihood of applying to certain *types* of jobs differently among Democrats and Republicans. Both Democrats and Republicans are more likely to apply to the male-stereotyped tech industry jobs when they believe that there are more women in Congress. Similarly, treated Democratic women are significantly more likely to apply to the highest paying and most competitive jobs, as well as the highest ranking positions of CEO and Executive Assistant. Treated Republican women, on the other hand, are significantly more likely to apply to the more female-stereotyped education industry jobs, as well as the non-highest paying, non-most competitive and lower ranking Branch Manager and Assistant Manager jobs. In fact, aside from the lowest ranking job of administrative assistant, the only job attributes that are not positively and significantly affected by treatment among Republicans are the highest ranking jobs of CEO and Executive Assistant. Thus, in general, treatment causes Democratic women to be more likely to apply to potentially exclusionary jobs, such as those in the tech industry, as well as jobs labeled as the most competitive and highest paying, and jobs that are highest ranking, i.e. CEO and Executive Assistant. Republican women, on the other hand, generally respond to treatment by increasing their likelihood of applying to most job types across the board, with the exception of those that are highest ranking, i.e. CEO and Executive Assistant.

The fact that Democratic women are positively affected when it comes to discriminatory jobs

[11]It is also plausible, and we specified as such in our pre-registration, that the treatment is most salient to partisans because all of the 127 women serving in the U.S. Congress identify as either Democrats or Republicans. Thus, it is possible that the treatment is most salient to those who also share partisan identity with at least some of the women in Congress.

is largely explained by the fact that Democratic women have significantly higher expectations of being discriminated against when applying to jobs than their Republican counterparts. This leads us into a discussion of the mechanism by which beliefs about descriptive representation positively impact labor market participation.

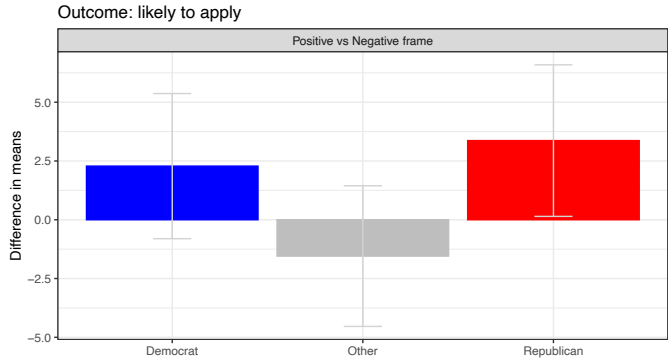

Figure 4: Grand Average Treatment Effect of Positive vs Negative frame on "Likely to Apply" (standard errors clustered by subject)

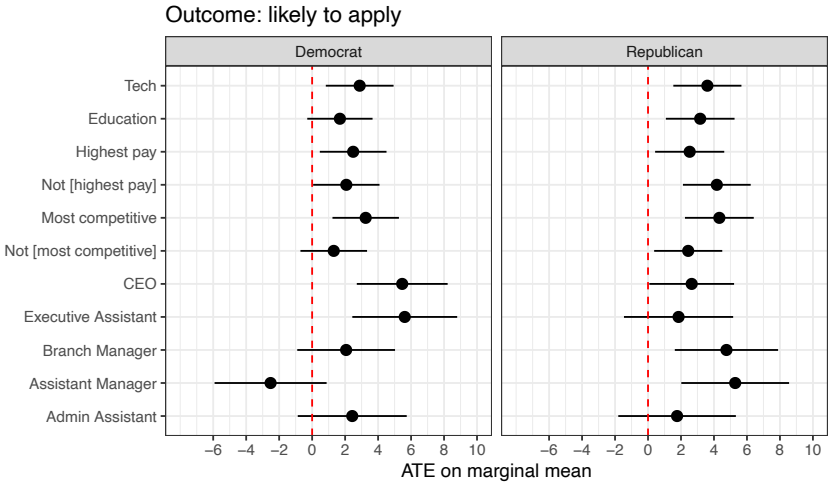

Figure 5: ATE on Marginal Means of "Likely to Apply" by Job Attribute (bootstrapped standard errors cluster by subject)

4.1 Mechanisms

Democratic women are significantly more likely to expect discrimination when applying to jobs than Republican women ($p < .01$ in a difference-in-means test, also see Appendix Figure M.28). This suggests that, if increased descriptive representation lowers these expectations (H3), then this may be an underlying mechanism by which Democratic women's likelihood of applying to male-stereotyped, potentially discriminatory jobs would increase.

This is what we find in our experimental data. Recall that we asked a series of mechanism

questions, which appeared immediately following treatment (i.e. before the "fake end screen" and subsequent job profiles). The positive frame significantly reduces Democratic women's expectations of discrimination relative to the negative frame.[12] We also find that Republican women's expectations of discrimination are unaffected by treatment. It therefore stands to reason that, since Figures 4 and 5 show that treated Republican women are significantly more likely to apply to jobs, they are affected by the treatment through an *alternative mechanism*. Thus, we turn now to understanding an "empowerment" effect.

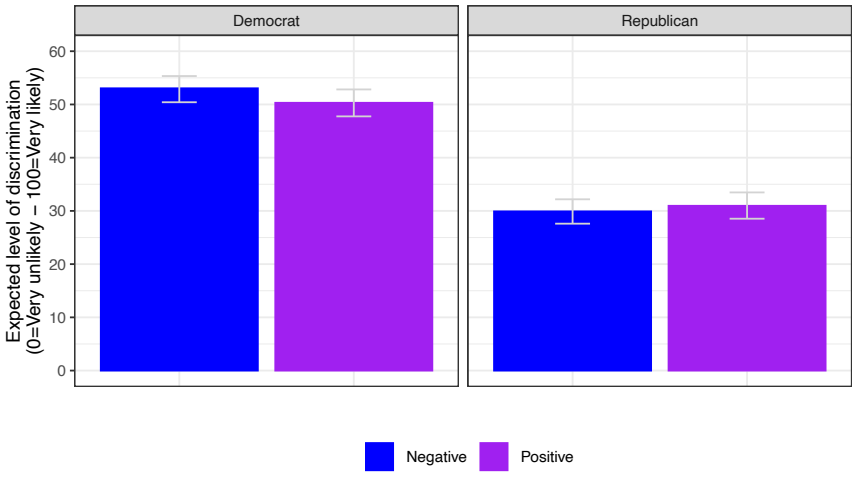

Figure 6: Average Expectations of Discrimination by Treatment Condition

In addition to other mechanism questions asked immediately following treatment (discussed below), we take our question about how *qualified* subjects felt for each job as one measure of empowerment. Democratic women do not exhibit much evidence for this mechanism. Figure 7 shows that the only significant average treatment effect among Democratic women is on feeling qualified for the CEO job.[13] Republican women, however, are significantly more likely to "feel qualified" for the most competitive, non-highest paying, branch manager and assistant manager jobs. The evidence here is admittedly mixed. For example, unlike Democratic women, treatment does not significantly increase Republican women's feelings of being qualified for the CEO job. This is perhaps due to Republican women's significantly lower expectations of discrimination. For Republican women, "most competitive" may be taken as a stronger signal about likelihood of being hired than the rank of the job, since, if one does not expect discrimination, "competitiveness" is arguably the most objective signal about the odds of getting a job. If this

[12] In a pre-registered one-sided difference-in-means test, $p = .06$.

[13] The grand average treatment effects are null among both Democratic and Republican women (Appendix Figure L.23.

is the strongest deterrent for Republican women, then the fact that the largest significant effect of treatment is on Republican women's feelings of qualification for the most competitive jobs suggests that they may have felt empowered to apply to these jobs.

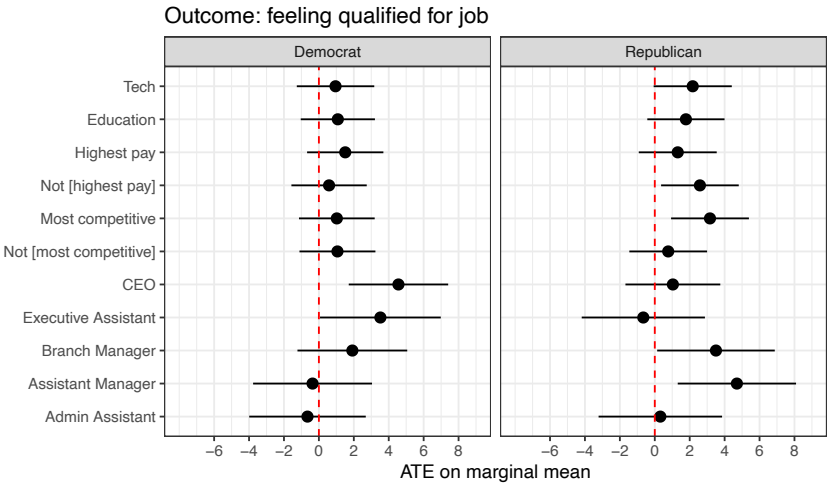

Figure 7: ATE on Marginal Means of "Feel Qualified" by Job Attribute

To further measure empowerment effects, we asked "how proud are you to be a woman?" immediately following treatment. Democratic women are, on average, significantly more likely to say they feel proud to be a woman than their Republican counterparts.[14] However, Democratic women's response is similar across treatment groups. Conversely, Republican women in the positive frame are significantly more likely to report feeling "proud to be a woman" than those in the negative frame. Taken together with the suggestive evidence in Figure 7, we think that Republican women are more likely to apply to jobs because they feel empowered when they perceive that there are more women in Congress.

As discussed above, we find convincing evidence that treated Democratic women lower their expectations of discrimination when applying to jobs. These alternative mechanisms are consistent with heterogeneous treatment effects on *the types of jobs* to which Democratic and Republican women are more likely to apply. Democratic women react to treatment by increasing their likelihood of applying to potentially *discriminatory* jobs, such as those in the tech industry and the highest ranking jobs, while treated Republican women are more likely to apply to jobs across the board.

To round out our discussion of mechanisms, we asked one additional question about discrimination, and two additional measures of empowerment. First, we measure updates to beliefs

[14] See Appendix Figure E.7.

about *institutional protection* from discrimination (i.e. H2) by asking "how likely do you think it is that something would be done to rectify the situation if you took action when you experienced discrimination when applying to a job?" Here we find no evidence that our treatment changed subjects' beliefs, although we find further evidence that Democratic women see discrimination as more of a problem, i.e. they are less likely to report believing something would be done if they experienced discrimination than their Republican counterparts.[15] Second, we take two additional approaches to measuring an empowerment effect; however, we find null treatment effects on both of these two alternative measures of empowerment.[16] Given that the existing literature does not provide one concrete or reliable measure of empowerment, we do not take lack of evidence on these other measures to indicate that Republican women were not necessarily empowered. However, we do acknowledge that our evidence for the mechanism of updating beliefs about discrimination among Democratic women is perhaps stronger than our evidence for empowerment among Republican women.[17]

We now explore heterogeneity in our results according to relevant pre-treatment moderators, which further explain the heterogeneity in treatment effects according to partisanship uncovered in this section.

4.2 Heterogeneity

We present our effects moderated by a pre-treatment measure of feelings of marginalization,[18] which is an average of three 0-100 scale questions regarding subjects' feelings that they are marginalized on the basis of being a woman.[19] Republican women are far less likely to feel marginalized than their Democratic counterparts ($p < .01$ in a difference-in-means test). This is consistent with evidence presented earlier showing that Republican women are significantly less

[15] Results reported in Appendix Figure H.12 in the Appendix.

[16] See Appendix Figure H.13 to **??**. Given the null results on these feeling thermometer measures of attitudes towards women, we can rule out the possibility that our results are driven purely by "mood effects."

[17] Using mediation analysis (see Appendix J), we do not find significant results showing that expectations of discrimination and empowerment mediate our main effects. Since we measure *qualified for job* after the outcome measure *likely to apply*, we cannot apply the mediation analysis to this empowerment mechanism variable. However, the best way to uncover mediation effects is to randomize the mediating variables (Bullock, 2011). But in this case, it is already well documented that expectations of discrimination reduces probability of applying to jobs, and empowerment increases the probability of applying to jobs (see previous citations). Thus, the fact that we demonstrate that our treatment of interest, perceived descriptive representation, significantly affects these mediators strongly suggests that the reason women are more willing to apply to jobs according to treatment is because descriptive representation moves these mediators.

[18] As is the case with all tests within this manuscript unless otherwise noted, all hypotheses tested according to pre-treatment moderators were pre-registered.

[19] Appendix I lists questions and Appendix Figure I.16 shows the distribution of responses.

likely to expect discrimination than Democratic women. Figure 8 shows treatment effects on our primary outcome of interest, *likely to apply*, moderated by this measure of *feeling marginalized* (coded based on a median split). Here we find that treatment effects are strongest among both Democrats and Republicans who feel marginalized. Thus, while Republican women are significantly less likely to experience feelings of marginalization than their Democratic counterparts, those Republican women who feel marginalized are more likely to react positively in response to treatment. The fact that feelings of marginalization moderate women's reactions to increased descriptive representation, and the fact that these feelings are clustered by partisanship, helps to explain our differential effects by party. That is, while Democratic and Republican women appear to react differently to treatment, perhaps one unifying characteristic that explains such differential reactions is the underlying feeling of being marginalized on the basis of one's gender.

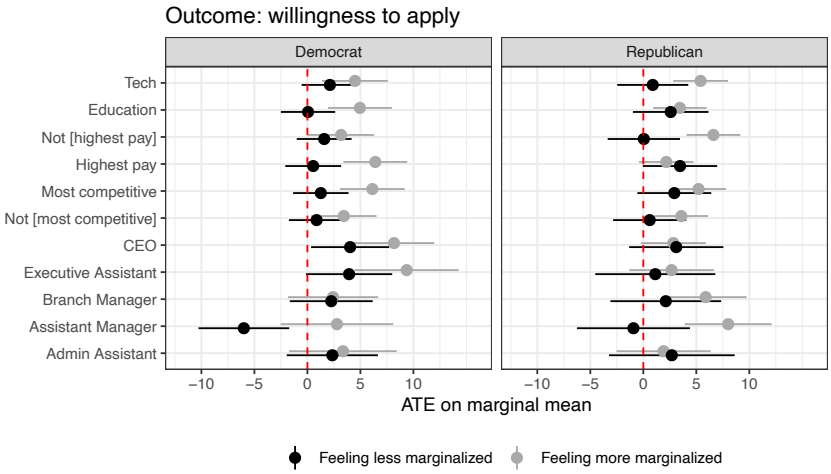

Figure 8: ATE on Marginal Means of "Likely to Apply" by Job Attribute, Moderated by Feeling Marginalized

5 Men Study: Experimental Results

Do similar perceptions about shifts in the political status quo have effects on *men's* labor market participation? We ran a second experiment, using the same treatments and outcomes, on a representative sample of U.S. men.[20] Existing theory offers two accounts with competing expectations about men's reactions to shifts in representation. One suggests a loss of empowerment

[20]See Appendix Figure N.29 for summary statistics showing representativeness of sample. There are two experimental design differences between the two studies: 1) the men experiment has only two experimental conditions, the positive and negative frames; 2) we did not recruit Independent/Other/Non-partisan men. We also slightly changed the nature of our survey questions testing mechanisms and pre-treatment moderators where appropriate.

in reaction to a loss of over-representation, with a negative effect on men's labor market participation. The second, a backlash account, suggests a positive effect whereby men might increase their participation as a way of retaliating for their waning over-representation.

As specified in our pre-registration, we found it difficult *ex ante* to adjudicate between the two expectations, and very few of these pre-registered hypotheses were confirmed in our data. Results showing all of our pre-registered hypotheses and tests are made available in a separate online supplementary appendix. There are insignificant positive grand average treatment effects among both Democratic and Republican men.[21] In terms of job types, Figure 9 demonstrates that Democratic men are significantly more likely to apply to most job types (all but CEO and Executive) when they are primed to consider women's increasing numbers in Congress in a positive rather than a negative frame. Republican men are significantly more likely to apply to only certain jobs, such as those in the tech industry.

Manipulation checks confirm that both sets of partisan men reacted to treatment by increasing beliefs and positive valence on perceptions of the number of women in Congress; but there are clear partisan differences. In the negative frame, Democratic men are significantly more likely to say that the number of women in Congress is a "reason for concern" than their Republican counterparts ($p < .01$ in a difference-in-proportions tests), whose modal response is "neither concern nor achievement." In the positive frame, Republican's modal response is still "neither," but there are significantly more who now say "achievement" ($p < .01$). By contrast, while Democratic men in the negative frame were evenly distributed across the three answer choices, the vast majority of Democratic men respond "achievement" in the positive frame ($p < .01$). [22] This increased positive valence on women's representation may partially be driven by social desirability bias. However, despite baseline differences, the fact that both groups of men, on average, increase their positive valence towards the number of women in Congress perhaps provides initial evidence against a backlash effect.

In terms of mechanisms, Figure 10 shows that Democratic men do not feel more qualified for most jobs according to treatment. Republican men, on the other hand, do exhibit evidence that treatment increases both their likelihood of applying to certain jobs as well as their feelings of qualification for these jobs. Neither Democratic nor Republican men are any more or less likely

[21] See Appendix Figure N.30
[22] See Appendix Figures N.32 and N.33

to expect discrimination in the positive versus the negative frame.[23]

It is less straightforward to interpret positive treatment effects among men than it was among women. A loss of over-representation might trigger some men to increase their likelihood of applying to jobs, particularly jobs in male-dominated industries, in order to push back against this waning over-representation. In a backlash account, we might expect an increase in feelings of qualification to correspond with the increase in likelihood of applying, particularly when it comes to traditionally male-dominated industries. We do find evidence of this among Republican men, who are both more likely to apply to and feel qualified for tech industry jobs. On the other hand, we might also expect that men experiencing a backlash effect should increase their expectations of discrimination, since we might expect these men to feel that women's increased representation is a result of practices such as affirmative action. We do not, however, find that treatment affects expectations of discrimination among Republican or Democratic men.

Thus, we do not have definitive evidence on the mechanism underlying the positive effect on applying to certain jobs among Democratic and Republican men. It is important to point out, however, that whether these results suggest a backlash effect or not, there is not a significant grand average treatment effect among either group of men. That is, perceptions that women's representation is growing does not significantly increase men's average likelihood of applying to jobs *in general*. On the other hand, while treated Democratic men are more likely to apply to both the male and female stereotyped industries (i.e. tech and education, respectively), treatment only significantly increases Republican men's likelihood of applying to jobs in the male stereotyped tech industry. This could be interpreted as stronger evidence for a backlash effect among Republican men, however it is important for future research to further develop these initial findings.

[23] See Appendix Figure N.31

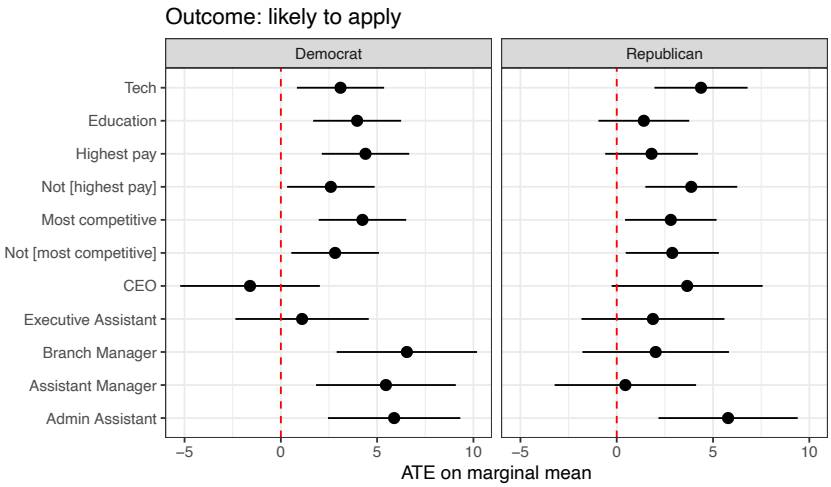

Figure 9: ATE on Marginal Means of "Likely to Apply" by Job Attribute (Men)

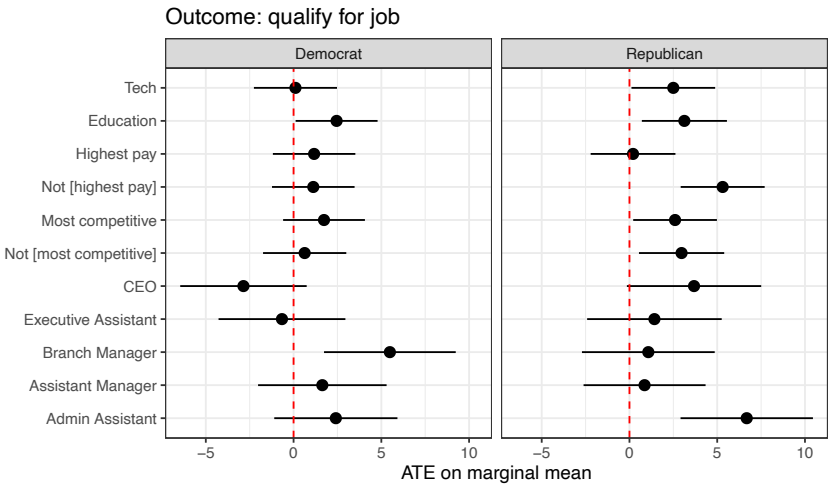

Figure 10: ATE on Marginal Means of "Feel Qualified" by Job Attribute (Men)

6 Conclusion

We test whether perceiving government to be more inclusive of "people who look like you" increases willingness to participate in the labor market among members of a large historically marginalized group. We find that when women believe there are more women in Congress, and when they perceive women's representation in Congress more positively, they are more likely to apply to jobs. The average effect is significant among Republican women, who are more likely to apply to jobs across the board. Democratic women, on the other hand, are significantly more likely to apply to those jobs that are either male-stereotyped (i.e. tech industry) or could be seen as potentially discriminatory (i.e. high ranking, high paying and highly competitive jobs). While these treatment effects are pronounced among partisan women, non-partisan and other

identifying women are unaffected by women's descriptive representation, which we interpret as evidence that, in order to be positively affected one must be engaged in the conventional political system.

We find evidence that Democratic women have significantly higher expectations of being discriminated against than their Republican counterparts. This difference in expectations of discrimination helps explain the partisan difference in treatment effects. Specifically, since Democratic women are more likely to expect discrimination, it follows that they would be positively affected by treatment when it comes to jobs that are potentially discriminating, such as male-stereotyped jobs. We show that the positive frame treatment reduces expectations of discrimination among Democratic women. Republican women, on the other hand, have lower expectations of being discriminated against, and thus treatment does not affect these beliefs. Instead, we find evidence that Republican women are empowered by increased perceptions of descriptive representation. Treated Republicans are more likely to say they feel qualified for certain jobs, such as the most competitive jobs, and treated Republicans are significantly more likely to say they are "proud to be a woman." Finally, we show that the positive treatment effect on women's willingness to apply to jobs is moderated by baseline feelings of marginalization in a way that helps explain these partisan differences in the main effects; the treatment effect is larger among women who feel more marginalized from both parties.

Our findings are the first to show that descriptive political representation matters not just for political behavior, but also for how individuals view the world, which has important effects on willingness to apply to jobs. The implication is that political representation, particularly highly visible forms, such as Congressional representation, is important for people's everyday lives in ways that have little to do with substantive representation and policy. Further, while our findings have direct implications for how we *frame* information about representation, we do not believe that the normative implication here is that framing is a substitute for further progress towards equal representation. Increased representation is extremely difficult to achieve. In the case of women's political representation, there are multiple social and institutional barriers to entry that will take systematic reform, as well as over-time norm shifts, to overcome (Crowder-Meyer and Cooperman, 2018; Bucchianeri, 2018; Dolan, 2010; Fox and Lawless, 2010). Given that such changes can take years, decades or even centuries, it is important to empirically document that, in the interim, framing positively any step-wise progress can have important ramifications for

the well-being of members of historically marginalized groups. Further, we know that increased political representation can impact women's choices not just in terms of applying to jobs, but also in terms of educational and political ambition (Beaman et al., 2012; Ladam, Harden and Windett, 2018). Given the feedback loop of representation begetting more representation, we advocate for a two-pronged approach whereby barriers to increased representation are continually challenged, but where we also highlight positive shifts towards increased representation along the way.

Finally, we consider whether there are countervailing effects on members of historically privileged groups. We analyze this with a second experiment among men. We do not find evidence of such a countervailing effect on men's labor market participation. In fact, we find some evidence that positively framing women's representation can increase willingness to apply to certain jobs among some men. We rely on future research to probe whether this is evidence of a backlash effect. One final interesting takeaway, however, is to compare the difference in treatment effects between men and women in order to determine whether women's descriptive representation helps to close the gender gap in likelihood of applying to jobs (we do find significant gender gaps, see Appendix Figure N.34). Figure 11 shows that, given that both Democratic women and men tend to increase their likelihood of applying to most jobs in the positive frame, the only significant positive effect when it comes to closing the gender gap is on the highest ranking position of CEO, while among Republicans the significant positive effect is on the most competitive jobs.

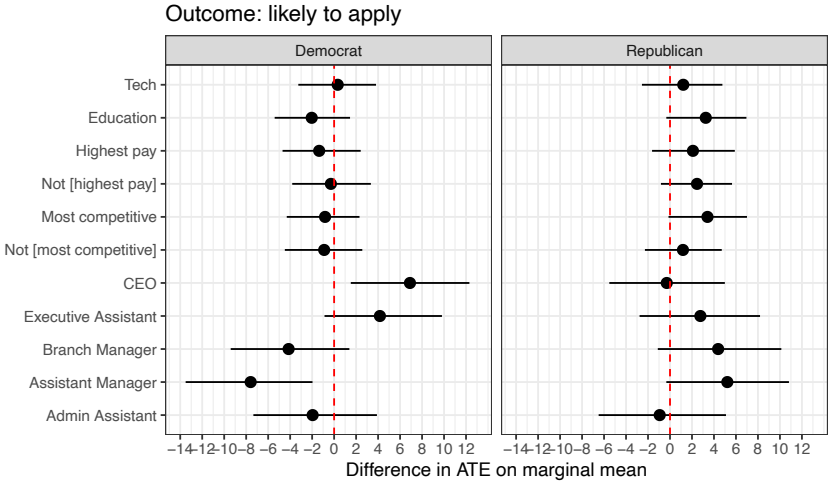

Figure 11: Difference in ATE on Marginal Means of "Likely to Apply" by Job Attribute (Women-Men)

Taken together, our evidence contributes further to the list of reasons why descriptive repre-

sentation is important. Adding to many influential studies demonstrating the effects of political inclusion on *political* outcomes, we demonstrate that descriptive representation can have a significant positive impact on the welfare of members of historically marginalized groups through a channel outside of politics. Given that we find such effects in studies on women, it is important for future research to investigate whether there are similar effects when it comes to other group identities, such as race and the intersection of race and gender. It is important to note that our exploration of the external validity of our findings (Appendix K) demonstrates that our effects are likely specific to white women, suggesting that future work focus on how increases in the representation of women of color affects their beliefs and behaviors, since our treatment reflects the fact that the majority of women in Congress are white. More generally, extant research suggests that descriptive representation is important for other groups, and this research design allows us to advance this line of inquiry by determining whether descriptive representation can have non-political, welfare-enhancing effects for members of marginalized groups.

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Appendix

Appendix

Table of Contents

A Observational Study

A.1 Census data outcome measures

Figure A.1: Distribution of *seeking job improvement* and *continuing education* taken from the American Community Survey (ACS) provided by IPUMS (Ruggles et al., 2019) for 2000-2017. *Seeking job improvement* is coded 1 when a respondent indicated to be employed and searching for a job and 0 otherwise. *Continuing education* is coded 1 when a respondent indicated to be enrolled in the same or a higher degree than the educational attainment the respondent already holds and 0 otherwise. The measures are averaged at the state-level.

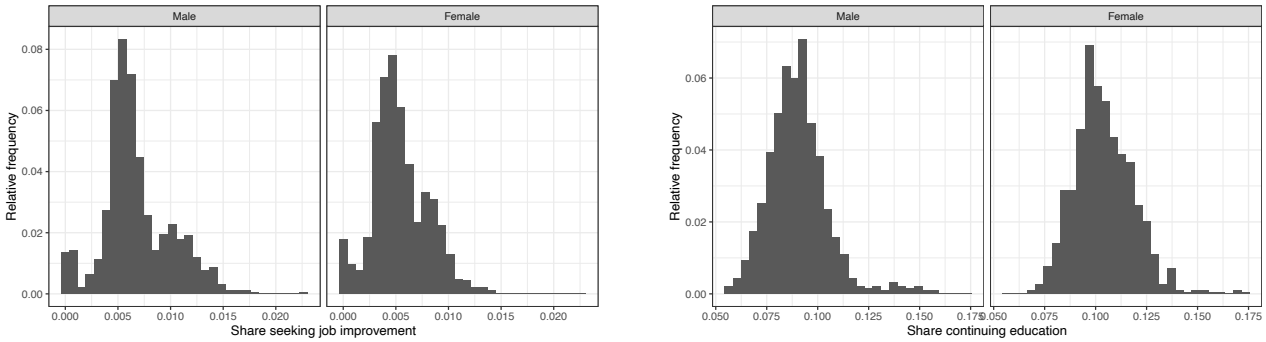


Table A.1: State-level regression of share continuing education and share seeking job improvement by gender on percent women in Congress from a state, employed state population, and total number of members of congress from a state (2000 - 2017). More information on the data source of independent variables is given with Table 1.

	Women		Men	
VARIABLES	Share continuing education	Share seeking job improvement	Share continuing education	Share seeking job improvement
Pct Women Among MoC from a State	0.00021***	0.00001	0.00022***	0.00001
	(0.00004)	(0.00001)	(0.00004)	(0.00001)
Employed Population in 100,000	0.00184***	0.00021***	0.00203***	0.00019***
	(0.00015)	(0.00003)	(0.00015)	(0.00004)
# MoC from a State	-0.00123**	-0.00001	-0.00140***	0.00004
	(0.00053)	(0.00010)	(0.00053)	(0.00013)
Constant	0.08893***	-0.00035	0.07884***	0.00043
	(0.00572)	(0.00107)	(0.00565)	(0.00136)
Observations	900	900	900	900
Adjusted R^2	0.19	0.07	0.22	0.04
State FE's	Yes	Yes	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2: State-level regression of gender gap in share continuing education and share seeking job improvement

VARIABLES	Share continuing education Women - Men	Share seeking job improvement Women - Men
Pct Women Among MoC from a State	-0.00001	-0.00000
	(0.00002)	(0.00000)
Employed Population in 100,000	-0.00019**	0.00002
	(0.00008)	(0.00002)
# MoC from a State	0.00017	-0.00006
	(0.00027)	(0.00006)
Constant	0.01008***	-0.00079
	(0.00286)	(0.00065)
Observations	900	900
Adjusted R^2	0.081	0.002
State FE's	Yes	Yes

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

B Women Study: Sample Characteristics

Table B.3: Relative Frequencies in Our sample vs. U.S. Voter File and Consumer Data (from L2 Inc)

		Sample			Voter File & Consumer Data		
		Democrat	**Republican**	**Other**	**Democrat**	**Republican**	**Other**
Age	18 to 29	0.09	0.10	0.13	0.16	0.09	0.22
	30 to 39	0.17	0.15	0.17	0.15	0.11	0.20
	40 to 49	0.18	0.15	0.16	0.15	0.16	0.18
	50 to 69	0.55	0.60	0.54	0.36	0.42	0.30
	70 and over	0.00	0.00	0.00	0.17	0.21	0.10
Education	Bachelor's degree	0.33	0.31	0.32	0.29	0.33	0.29
	Graduate degree	0.19	0.14	0.16	0.14	0.15	0.14
	High school diploma	0.15	0.19	0.15	0.30	0.29	0.28
	Less than high school	0.02	0.01	0.01	0.06	0.03	0.05
	Professional degree	0.02	0.01	0.02	0.00	0.00	0.00
	Some college	0.29	0.33	0.33	0.20	0.20	0.25
Income	$1,000 to $14,999	0.08	0.05	0.08	0.04	0.03	0.03
	$100,000 to $124,999	0.08	0.10	0.08	0.10	0.13	0.12
	$125,000 to $149,999	0.06	0.05	0.05	0.06	0.08	0.07
	$15,000 to $24,999	0.09	0.06	0.07	0.06	0.04	0.04
	$150,000 to $174,999	0.02	0.05	0.03	0.03	0.04	0.04
	$175,000 or more	0.10	0.13	0.12	0.07	0.09	0.07
	$25,000 to $34,999	0.09	0.09	0.10	0.08	0.05	0.06
	$35,000 to $49,999	0.13	0.12	0.13	0.14	0.09	0.11
	$50,000 to $74,999	0.22	0.21	0.19	0.25	0.25	0.26
	$75,000 to $99,999	0.13	0.14	0.15	0.17	0.21	0.20
Race	Hispanic	0.05	0.02	0.03	0.18	0.06	0.13
	Non-Hispanic black	0.11	0.01	0.04	0.23	0.01	0.08
	Non-Hispanic other	0.08	0.05	0.09	0.03	0.02	0.04
	Non-Hispanic white	0.76	0.91	0.84	0.53	0.89	0.71
	Turnout in 2012	0.86	0.87	0.75	0.62	0.73	0.40
	Turnout in 2016	0.89	0.89	0.79	0.71	0.81	0.53

C Women Pre-Test Data

Table C.4: Pre-Test Results–Women's Perception of Gender Stereotypes Across Industry

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Tech Industry Male-Dominated	311	7.1	2.4	0	5	9	10
Tech Industry Female-Dominated	311	3.7	2.4	0	2	5	10
Education Industry Male-Dominated	311	5.2	2.5	0	4	7	10
Education Industry Female-Dominated	311	5.6	2.6	0	5	8	10
Healthcare Industry Male-Dominated	311	5.6	2.8	0	5	8	10
Healthcare Industry Female-Dominated	311	4.8	2.7	0	3	6	10

D Women and Men Studies (same in both): Sample of an Outcome Screen

Figure D.2: Outcome Screen: Branch Manager (example from conjoint)

E Women Study: Distributions on Outcome Measure Results

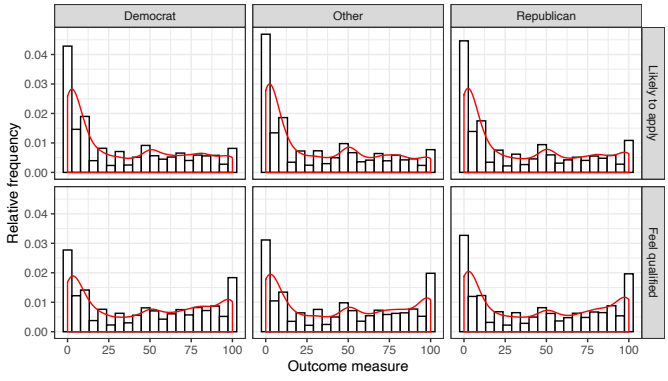


Figure E.3: Distribution of outcome measures by party identity

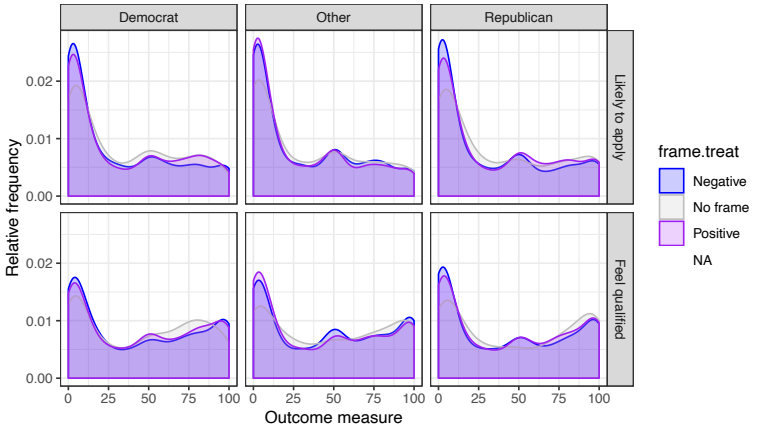


Figure E.4: Distribution of outcome measures by party identity and frame treatment

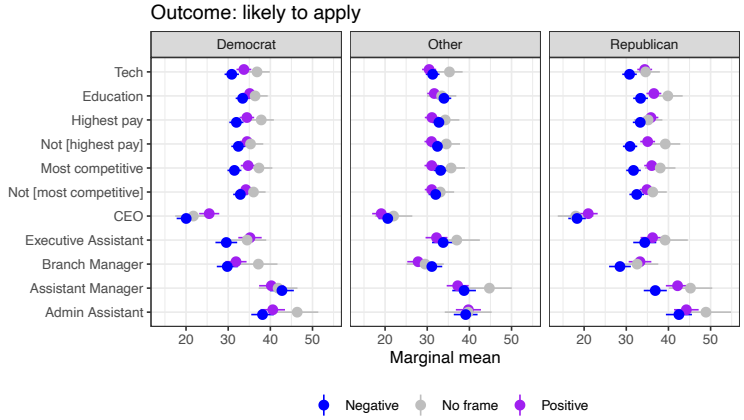


Figure E.5: Marginal Means by Frame Condition on Likely to Apply Outcome

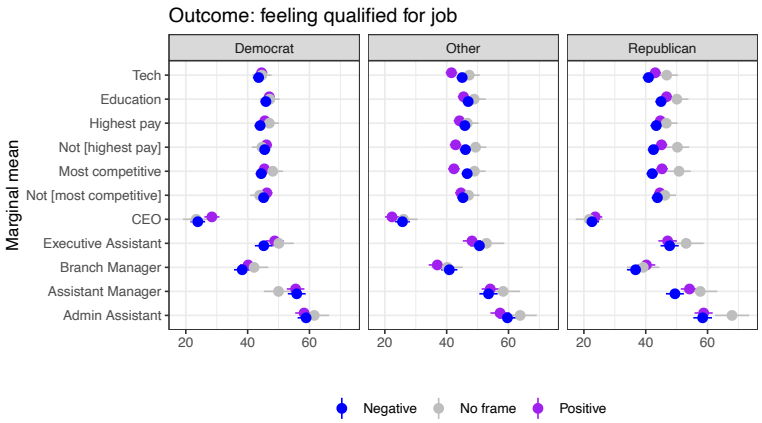


Figure E.6: Marginal Means by Frame Condition on Feel Qualified Outcome

We compute average treatment effects of the positive frame (over the negative frame) on our outcome measures likely to apply and qualify for job based on the differences in means shown in Figures E.5 and E.6. We argue that since each subject could potentially be assigned any of the treatment conditions, randomization of the frame treatment should be treated similarly to the fully factorial randomization of job attributes within the conjoint vignettes when estimating standard errors. One could certainly disagree and see the frame treatment assignment as fixed at the moment when subjects enter the conjoint experimental part of the survey. A more

conservative test accounting for this latter view, would generate standard error estimates for the average treatment effects reported in Figures 5 and 7 that are larger than the one used for inference in the main text. Still, all but one of the effects reported to be significant in the main text are still significant, using this more conservative approach, in the pre-registered one-sided tests at a significance level of $\alpha = .1$ (and 11 out of 18 tests return a significant average treatment effect at a significance level of $\alpha = .05$).

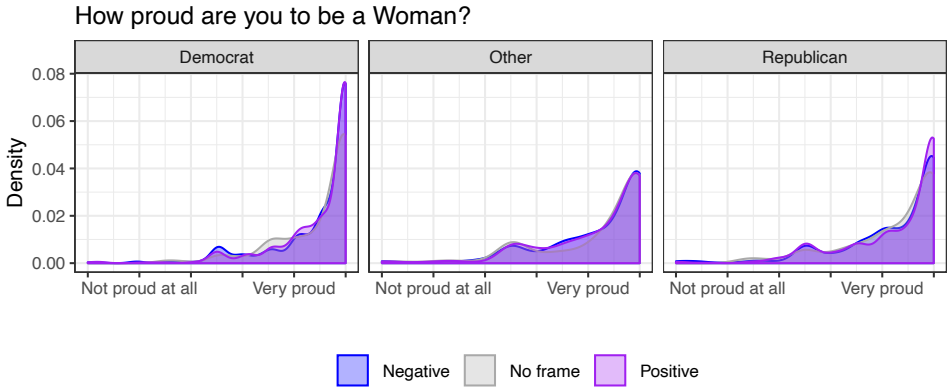


Figure E.7: Proud to Be a Woman by Treatment Condition

Given the peak in the density of people who rated themselves at 100, we create a dichotomous measure which is 1 when subjects rate themselves as 100, and 0 otherwise. Forty-two percent of Republican women in the positive frame condition report 100 on this "proud to be a woman" measure, while only 36% of Republican women in the negative frame condition report a score of 100 (p=0.03 in a one-sided t-test). Among Democrats, however, the means by treatment group are indistinguishable; both positive and negative frame report a score of 100 at a rate of 46%.

F Women and Men Studies (same in both): Treatment Screens

There are 535 legislators serving in the U.S. Congress.

Members of congress debate, vote on bills and work in committees to determine national laws. They also represent their constituents at the local, state and national level. There are two chambers of congress, the house and the senate.

Senators serve for a 6 years term, Representatives in the house for a 2 years term until they have to stand for elections again.

Of the 535 legislators,

- 280 are Democrats, 250 are Republicans
- **127 are Women**
- 39 are African American, 35 are Latinos, 13 Asian Americans and the remainder is White

Figure F.8: Baseline (no frame) Information Screen (also shown before Positive or Negative Frame)

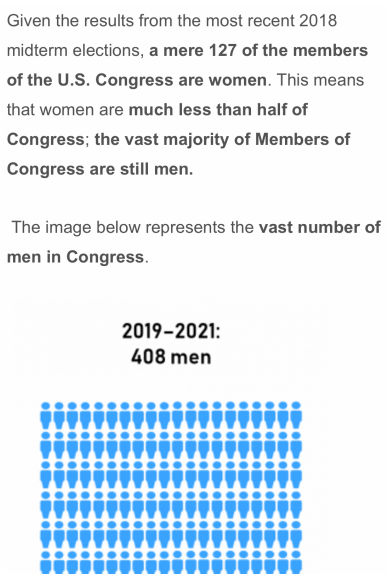


Figure F.9: Treatment Screen–Negative Frame Condition

There were 408 blue stick figures representing the number of men in Congress; however, subjects had to scroll down through the number of 408 men to get to the bottom of the screen, so the image is cutoff here to fit on the page.

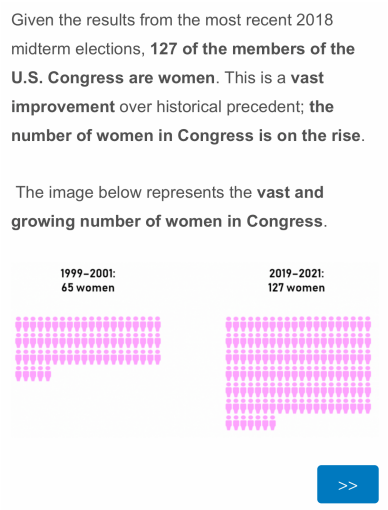


Figure F.10: Treatment Screen–Positive Frame Condition

G Women Study: Manipulation Check Results

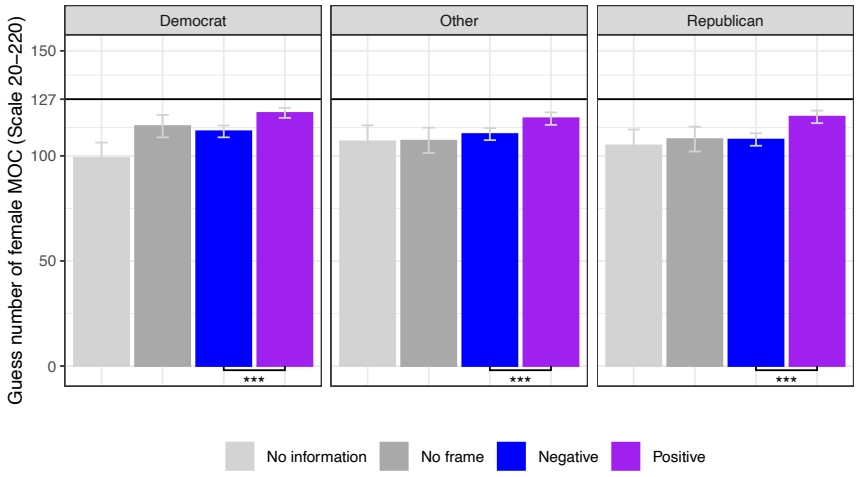


Figure G.11: Average Guess of the Number of Women in Congress by Treatment Condition

H Women Experiment: Mechanism Results

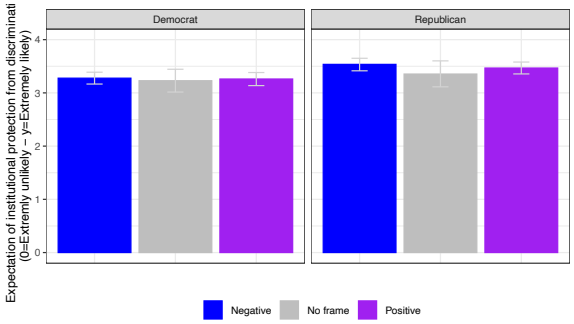


Figure H.12: Expectations of Institutional Protection from Discrimination by Treatment

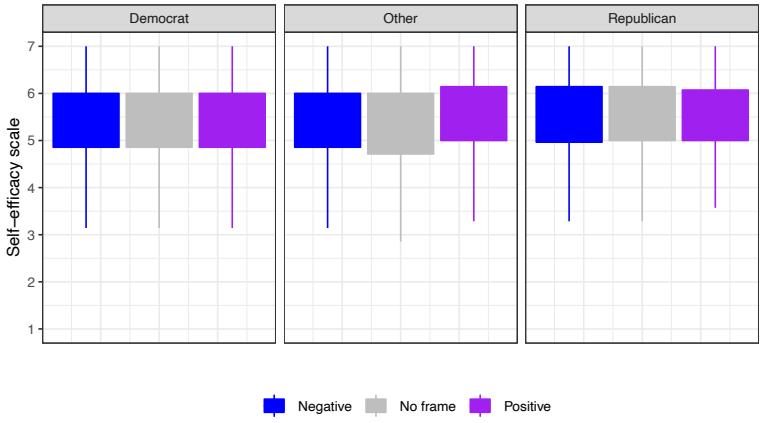


Figure H.13: Self-Efficacy Index by Treatment

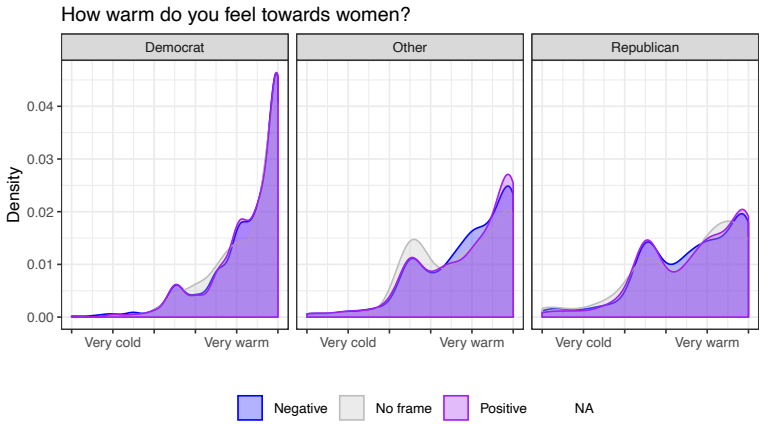


Figure H.14: Feeling Thermometer Towards Women by Treatment

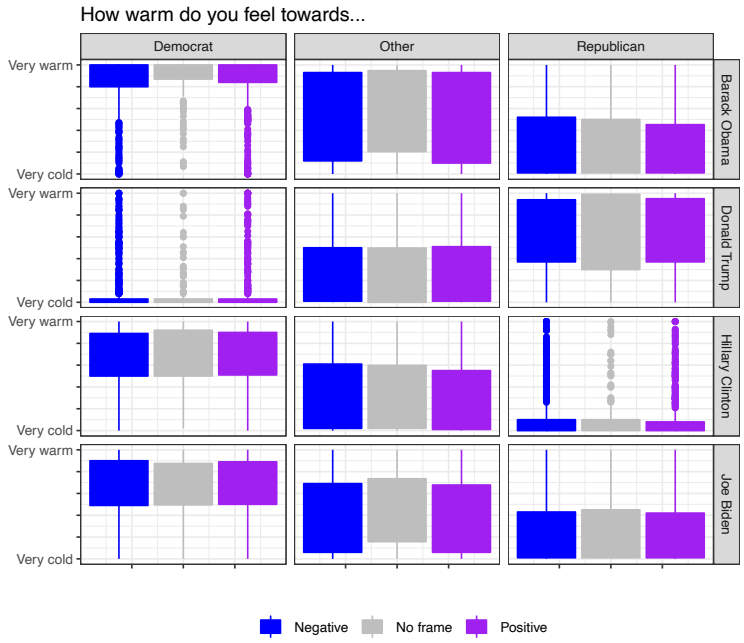


Figure H.15: Feeling Thermometer Towards Men and Women by Treatment

We asked about numerous other celebrities/well-known government officials; please email authors for results (all are null treatment effects).

I Women Study: Moderator Effect Results

Questions about Feelings of Marginalization:
1) "How male-dominated does your workplace feel to you (if you aren't currently working, describe your last work environment)?"; 2)"How much do you feel that you are treated unfairly because you are a woman?"; 3) "How much do you feel that you are treated badly because you are a woman?"

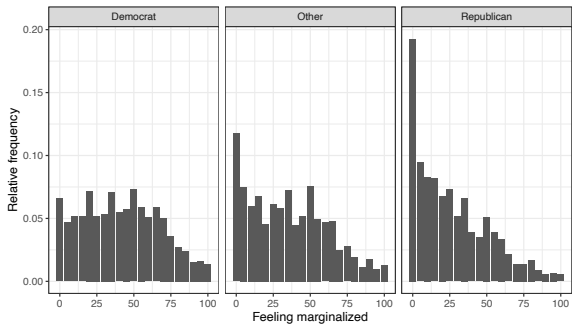


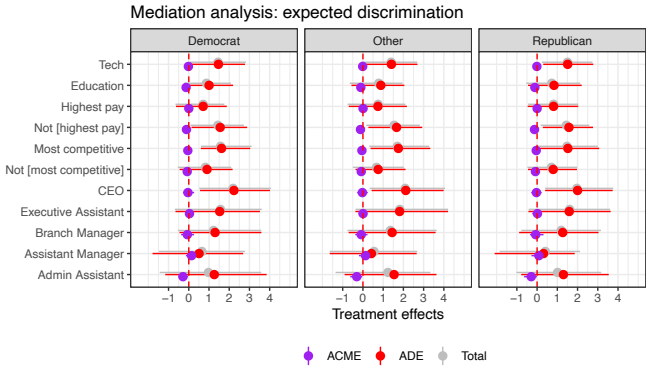
Figure I.16: Distribution of Responses to Questions About Feeling Marginalized

J Women Study: Mediation Analysis

We conduct mediation analysis with respect to the effect of the treatment on the outcome measure that may run through respondents' expectation of discrimination. The underlying data set features as unit of analysis vignette-respondent, giving us $5 * N$ rows of data. To conduct the mediation analysis on the conjoint outcome measure, we subset the data by attribute level; that is, when we compute the mediator effect on the outcome measure *likely to apply* for, say, a Tech job, we consider all observations of job profiles that feature a Tech job. As before, we also subset the data by partisanship.

We start with a set of linear, additive models: The mediator model is a regression of expected discrimination on the frame treatment, age, race, education, and income. The outcome model is a regression of the willingness to apply to a job on the frame treatment, expected discrimination (mediator), age, race, education, and income. Figure J.17 shows the average conditional mediator effect (ACME), that is the effect of the treatment on the outcome measure that runs through expected discrimination, the average direct effect (ADE) of the frame treatment on the outcome measure, and the total effect. In this analysis, almost all of the treatment effect works directly on the outcome measure and is not estimated to be mediated by expected discrimination.

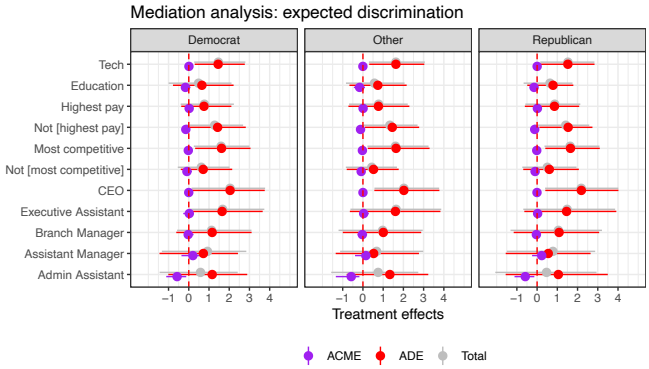
Figure J.17: ACME of expected discrimination, ADE, and total treatment effect



For a valid mediation analysis, the ignorability assumption needs to be met. To test whether that is the case, we compute the correlation between residuals in the mediator and outcome models. This correlation is small throughout ($\leq .2$). We further consider whether there are differences in the ACME across treatment groups. There is some evidence for this, e.g. on the job category *Admin Assistant*, the AMCE is different between positive and negative frame treatment at p=.06. Including an interaction of frame treatment and mediator in the outcome model to account for these differences still only generates very small estimates of the ACME.[24]

[24] We follow the suggestions of Imai, Keele and Yamamoto (2010) for analysing mediator effects using the mediation R package by Tingley et al 2014.

Figure J.18: ACM of proud to be a women, ADE, and total treatment effect



K Ecological, External and Construct Validity

We explore the ecological and external validity of our findings. We start by analyzing a certain subset of our subjects who were not exposed to manipulation–the "no frame" subjects. Our primary goal is to show that our manipulation checks strongly predict our outcomes of interest in the absence of manipulation. Looking at unadulterated, "natural resting point" beliefs about the number of women in Congress, women who happen to believe that there are more women in Congress are more likely to apply to jobs. This lends credibility to the ecological validity of our experimental findings. We then also aim to show which types of covariates, such as age and race, predict these relatively higher or lower beliefs about descriptive representation as they appear at their "natural resting point." Given the representative nature of our sample, this speaks to the external validity of our findings by allowing us to make statements about *who* in the population is most likely to be affected by their beliefs about descriptive representation.

Using our "no frame" subjects, we investigate which types of women, according to age, race and education, are more likely to believe that there are more women in Congress, and are more likely to see this as an achievement. We use the "no frame" subjects because they tell us how the "natural resting point" break down by demographics when political context has been made salient, i.e. when a screen discussing political representation in Congress has been presented.

Using a series of bivariate regressions, Tables K.5 and K.6 show that race is the most significant predictor of beliefs about descriptive representation. White Democratic women are much more likely to say that the number of women in Congress is an achievement than Hispanics, Blacks and those that identify as another racial category. White Democratic women are also much more likely to provide a higher guess of the number of women in Congress than women of color. None of the other covariates predict these measures of beliefs about descriptive representation as strongly and significantly as race. These results indicate that our treatment effects are likely most relevant to white women, given that they have significantly higher beliefs about descriptive representation at their "natural resting point." This is not to say that women of color could not benefit from real-world interventions that could increase their beliefs about descriptive representation.

We demonstrate how unadulterated beliefs about descriptive representation predict likelihood of applying to jobs. Again, we use our "no frame" subjects because this condition mimics real-world settings where political representation has been made salient, but where women are not manipulated in how they feel about the number of women in Congress. Table K.7 shows that, among Democratic women, there is a positive and significant relationship between our two measures of beliefs about descriptive representation and likelihood of applying to jobs. These results suggest that, while Republican women can be made to believe they are more descriptively represented experimentally, and while this manipulation significantly affects Republican women's likelihood of applying to jobs, Republicans are not more inclined to apply to jobs given their natural resting point beliefs about descriptive representation. Democrats, on the other hand, are significantly more likely to apply to jobs when they believe there are more women in Congress, even when these beliefs are measured at their natural resting point.

To determine whether the question about subjects' likelihood of applying to jobs represents a concept that mimics the real world (i.e. construct validity), we investigate whether our treatment effects are most salient among those subjects in our sample who are most likely to be actively applying to jobs at the time of study. To do this, we moderate our treatment effects by a pre-treatment question asking about our subjects' current employment

Table K.5: External Validity: Demographics that predict beliefs about descriptive representation: Responses to # of Women in Congress is Achievement, among No Frame Subjects

	Democrats			**Republicans**		
	Achiev.	Achiev.	Achiev.	Achiev.	Achiev.	Achiev.
White	0.25*			-0.04		
	(0.15)			(0.21)		
Age		0.01			0.01*	
		(0.00)			(0.00)	
Education			-0.09*			-0.05
			(0.04)			(0.03)
Constant	1.78***	1.66***	2.41***	2.00***	1.57***	2.19***
	(0.12)	(0.24)	(0.24)	(0.20)	(0.23)	(0.15)
Observations	179	179	179	151	153	153

Results from OLS Regressions. Significance levels: * < 10%** < 5%*** < 1%. Standard errors clustered at the subject level reported in parentheses. Given the conjoint nature of the outcome measure, there are five observations for each respondent (each respondent saw 5 job profiles). Number of women in Congress is a reason for concern is coded 1 if concern, 2 if neither and 3 if achievement.

Table K.6: External Validity: Demographics that predict beliefs about descriptive representation: Guess of the number of women in Congress, Among No Frame Subjects

	Democrats			**Republicans**		
	Guess	Guess	Guess	Guess	Guess	Guess
White	13.87**			-6.54		
	(6.87)			(10.99)		
Age		-0.07			0.14	
		(0.19)			(0.25)	
Education			0.61			1.99
			(1.70)			(1.88)
Constant	104.00***	117.40***	110.78***	114.43***	101.07***	98.47***
	(6.26)	(9.25)	(9.29)	(10.53)	(13.62)	(9.49)
Observations	182	183	183	154	157	157

Results from OLS Regressions. Significance levels: * < 10%** < 5%*** < 1%. Standard errors clustered at the subject level reported in parentheses. Given the conjoint nature of the outcome measure, there are five observations for each respondent (each respondent saw 5 job profiles). Guess of the number of women in Congress was a response using a slider ranging from 20 to 220.

Table K.7: Descriptive Relationships Between Beliefs About Descriptive Representation and Likely to Apply to Jobs–Among subjects in the "No Frame" condition

	Democrats			**Republicans**		
	Likely Apply	Likely Apply	Likely Apply	Likely Apply	Likely Apply	Likely Apply
# of women concern	5.20**			-2.91		
	(2.22)			(3.92)		
Guess # of women		0.17***			0.06	
		(0.05)			(0.06)	
Constant	26.54***	17.03***	25.22***	43.54***	31.00***	32.33***
	(4.57)	(6.31)	(4.93)	(8.27)	(6.17)	(7.93)
Observations	895	915	895	765	785	760
Subjects	179	183	179	153	157	152

Results from OLS Regressions. Significance levels: * < 10%** < 5%*** < 1%. Standard errors clustered at the subject level reported in parentheses. Given the conjoint nature of the outcome measure, there are five observations for each respondent (each respondent saw 5 job profiles). Likely Apply is subjects' response to how likely they would be to apply to a given job profile on a 0-100 scale. Number of women in Congress is a reason for concern is coded 1 if concern, 2 if neither and 3 if achievement. Guess of the number of women in Congress was a response using a slider ranging from 20 to 220.

status. It is important to note that the vast majority of our sample is employed (depicted in Figure K.19), and thus the confidence intervals are quite large when we look at effects among the small subset of our sample who may be deemed "seeking employment," that is they either identify themselves as temporarily laid off, unemployed or a student. Nonetheless, Figure K.20 shows that the treatment effect is consistently more pronounced among those "seeking employment" than it is among those that are currently "employed." Another interesting pattern that emerges here is that the effects among Republican women that identify as "homemakers" are consistently in the opposite direction, consistent with the idea that underlying attitudes about traditional gender roles and marginalization, which cluster by partisanship, act to significantly moderate the impact of our treatment.

Figure K.19: Distribution of "Employed" vs. "Seeking employment" (temporarily laid off, unemployed, students) vs homemaker. Retired, permanently disabled are omitted. Based on variable *work*.

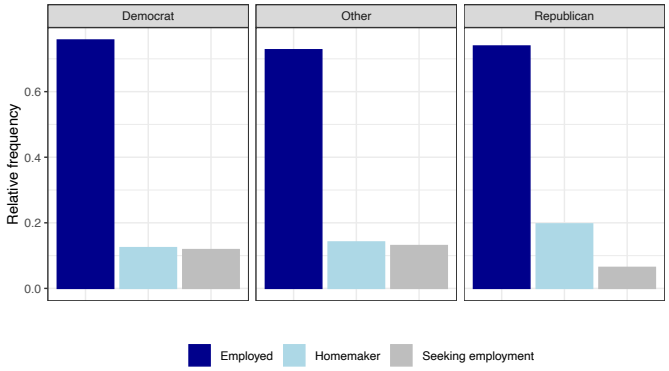
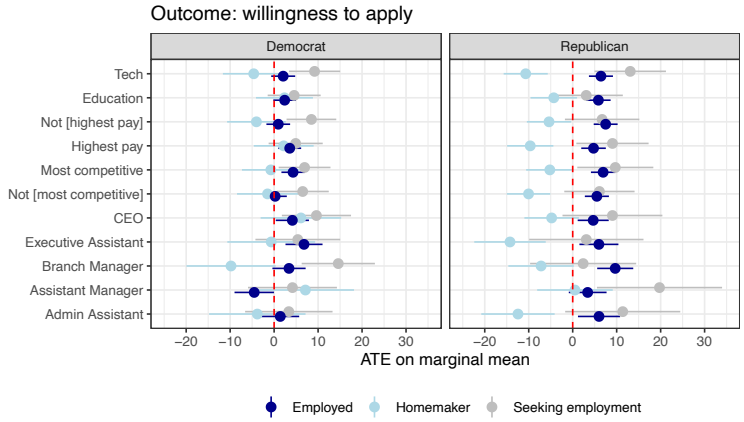


Figure K.20: ATE Moderated by "Seeking Employment"



L Independent/Other/Non-Partisan Results

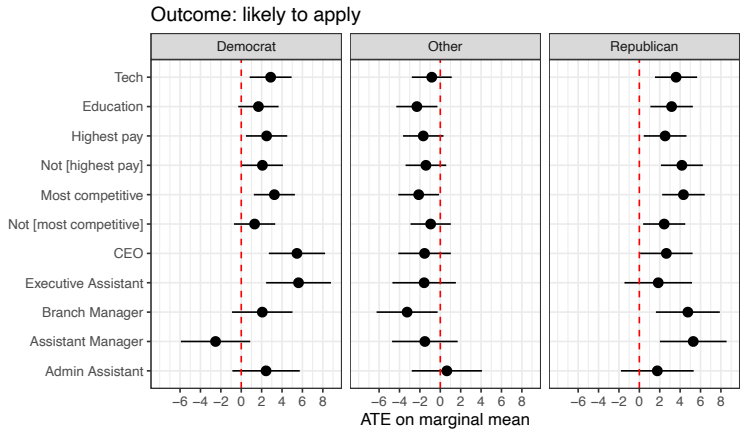


Figure L.21: Average Treatment Effect of Political Inclusion on "Likely to Apply" to Jobs by Job Attribute

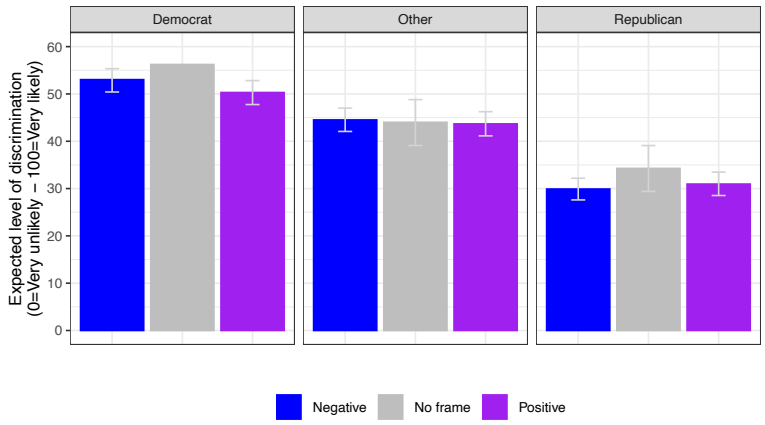


Figure L.22: Average Expectations of Discrimination by Treatment Condition

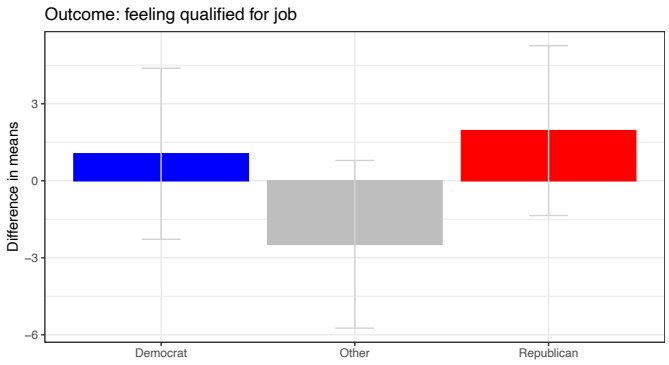


Figure L.23: Average Treatment Effect on "Feel Qualified'

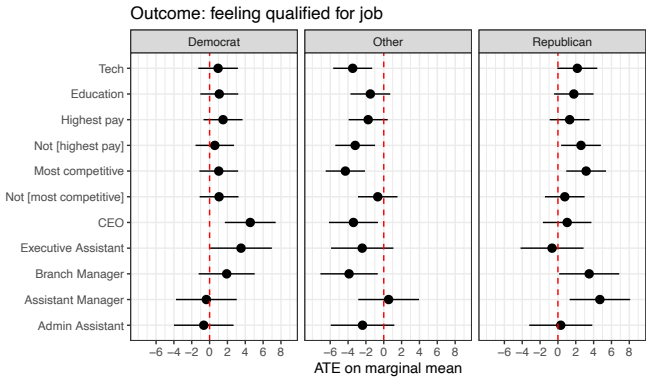


Figure L.24: Average Treatment Effect on "Feel Qualified" by Job Attribute

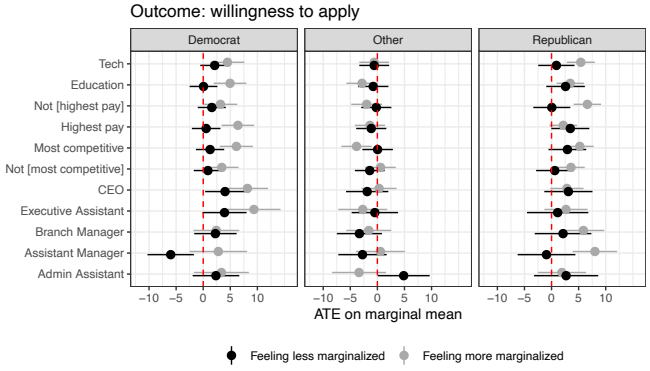


Figure L.25: Average Treatment Effect on Likely to Apply Moderated by Feeling Marginalized

M Women Experimental Results Replicated Showing Comparison to "No Frame" Subjects

Here we show the (marginal) means of our primary and secondary outcomes of interest, including the "no frame" subjects for reference. While we prefer to use our "no frame" subjects in order to explore ecological and external validity (see Appendix K), we note that, with only a few exceptions (such as CEO among Democratic women), the no frame subjects' likelihood of applying is higher than the positive and negative frames. We interpret this to mean that women's likelihood of applying to jobs is reduced by mention of women's representation (relative to no prime about women in government). This is likely due to the natural resting point of women's feelings about political descriptive representation being quite low.

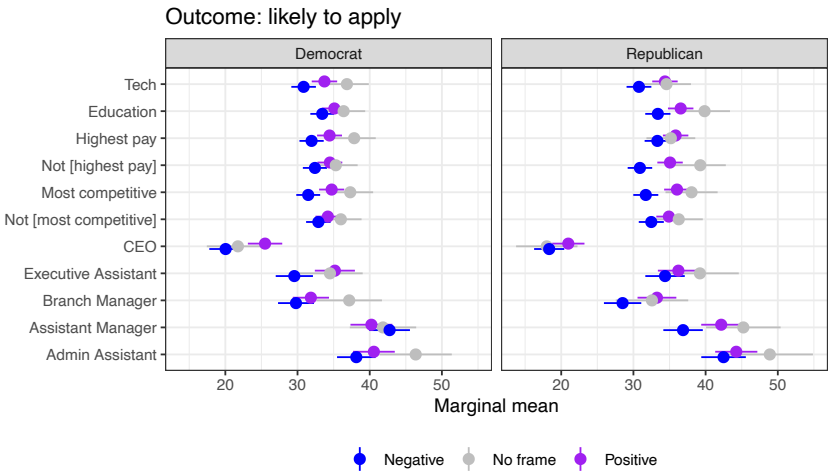


Figure M.26: Marginal Means of "Likely Apply" by Job Attribute, by Treatment Condition

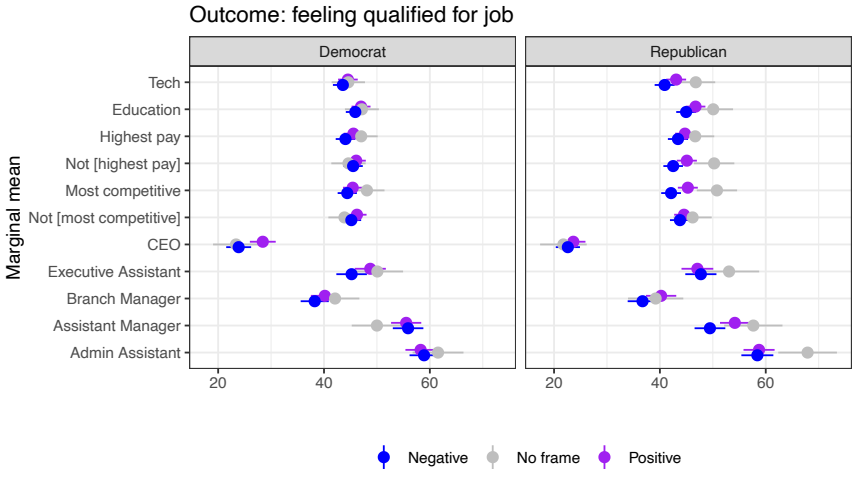


Figure M.27: Marginal Means of "Feel Qualified" by Job Attribute, by Treatment Condition

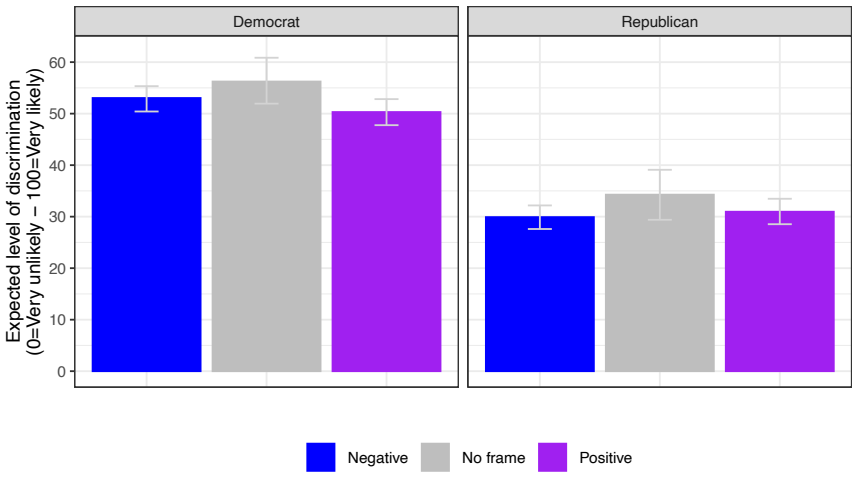


Figure M.28: Average Expectations of Discrimination by Treatment Condition

N Men Study Appendix

N.1 Men Study: Sample Characteristics

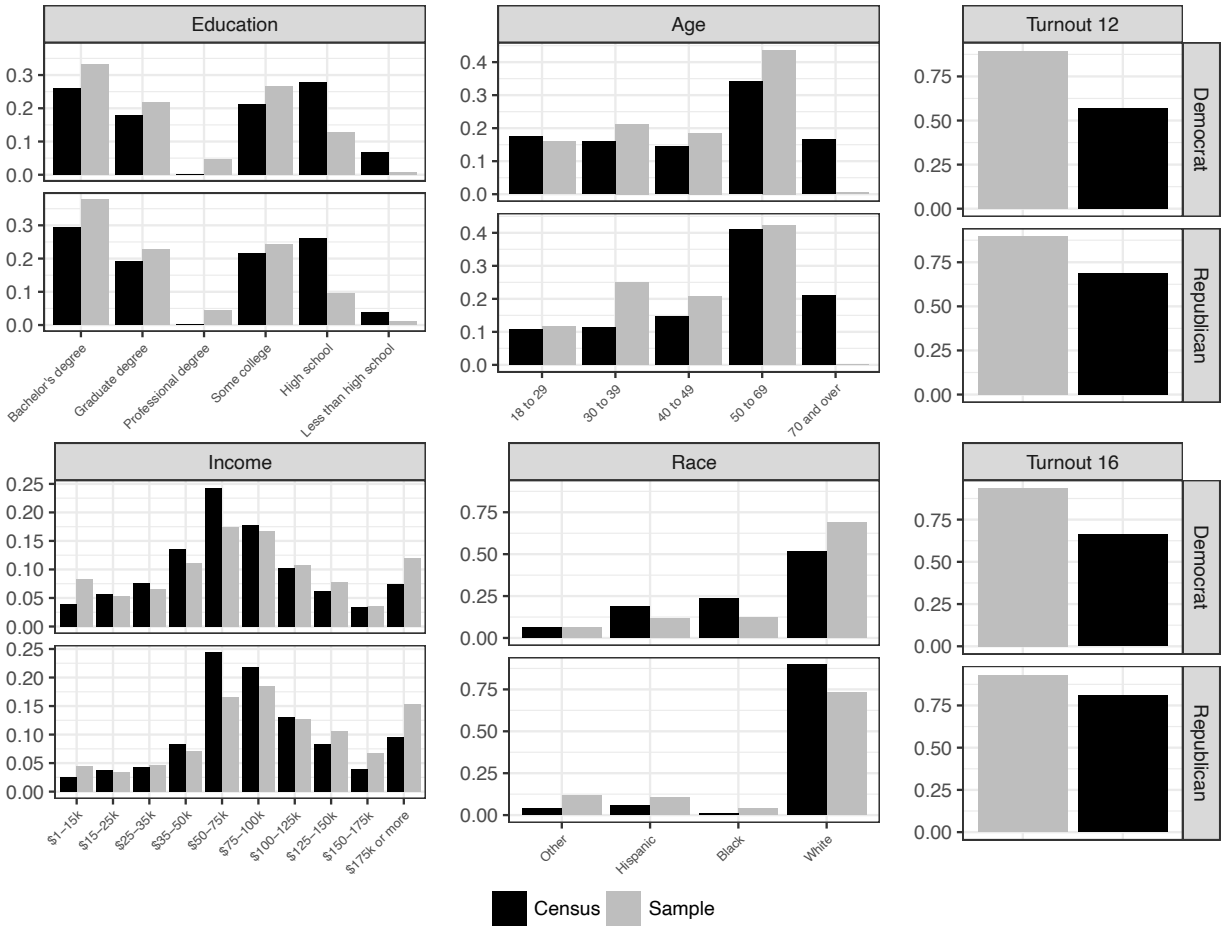


Figure N.29: Sample Descriptives of Men Study Compared to L2 Data on Partisan Sub-samples of U.S. Men

N.2 Results for Men Study

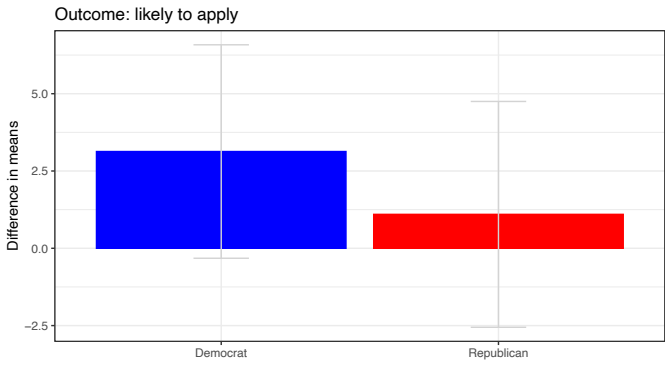


Figure N.30: Grand Average Treatment Effect, Likely Apply

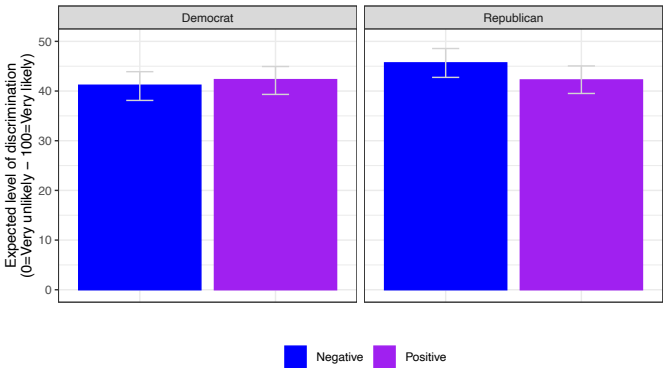


Figure N.31: Average Expectations of Discrimination by Treatment Condition (Men)

N.3 Manipulation Check Results for Men

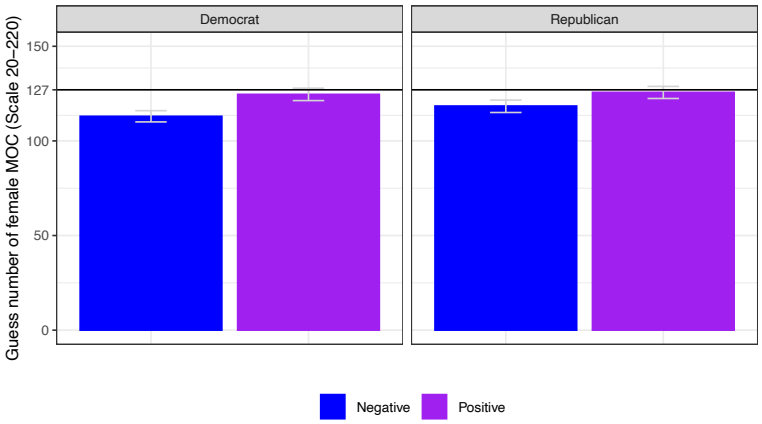


Figure N.32: Men: Mean Guess of Number of Female MoC

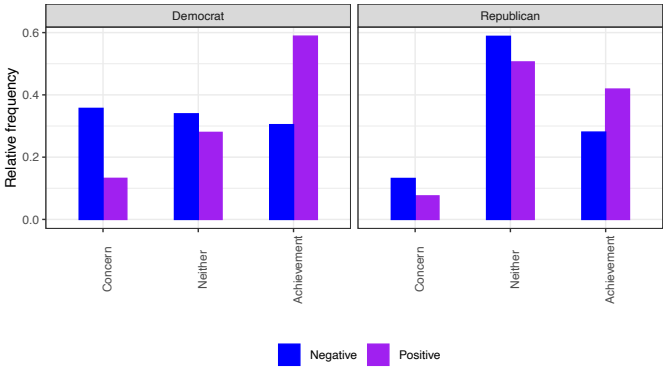


Figure N.33: Men: Distribution of number of women concern or achievement

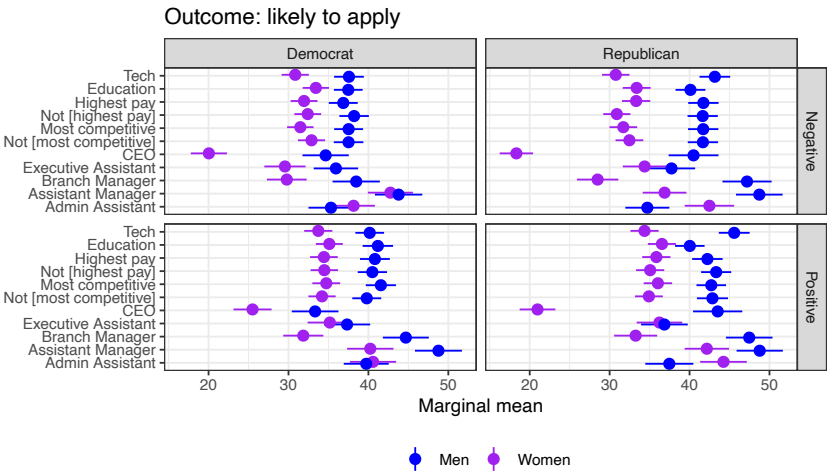


Figure N.34: Marginal Means of "Likely to Apply" by Job Attribute (Women and Men)