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RESEARCH ARTICLE

Citizen responses to female executives: is it sex, novelty or both?

Leslie A. Schwindt-Bayer^a and Catherine Reyes-Housholder^b

^aDepartment of Political Science, Rice University, Houston, TX, USA; ^bDepartment of Government, Cornell University, Ithaca, NY, USA

ABSTRACT

Women increasingly have been elected to executive office – both at the national and subnational level – in countries throughout the world. Yet, we know little about the effects that the election of a woman to executive office has on citizen attitudes, political engagement, or political participation. In this paper, we argue that the election of a woman to an executive could have effects through the *presence* of a woman in the executive, the *novelty* of a woman assuming executive office, or both. We test these hypotheses with a survey experiment conducted in Brazil that focuses on the election of a hypothetical female governor. This project sheds light on how citizens respond to female executives with a causal analysis in an important region for gender and executive politics.

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Although still a relatively rare occurrence, women have begun winning executive office at national and subnational levels in countries throughout the world. This trend has been particularly notable in Latin America, where six different women have been elected president¹ and 7% of governors and 15% of mayors nationwide were female in 2012 (Escobar-Lemmon and Funk 2015). Yet, female executives are still widely considered a novelty. Scholars know relatively little about the effects on citizens of women's election to executive office because the vast majority of research has focused on legislatures (Alexander 2012; Atkeson 2003; Atkeson and Carrillo 2007; Barnes and Burchard 2013; Broockman 2014; Desposato and Norrander 2009; Dolan 2006; Hansen 1997; Karp and Banducci 2008; Kittilson and Schwindt-Bayer 2010; Koch 1997; Lawless 2004; Reingold and Harrell 2010; Schwindt-Bayer and Mishler 2005; Wolbrecht and Campbell 2007; Zetterberg 2008). Studying the potential impact of female executives and their novelty on mass attitudes and behavior is important because of the power of executives and the masculine stereotypes associated with executive politics (Duerst-Lahti and Kelly 1995).

In this paper, we explore two dimensions of the possible effect of female executives – the *presence* of a woman in office and the *novelty* of electing the “first woman” – and we evaluate their effects on the political attitudes, political engagement, and political participation of women and men. Although much research has asked about these kinds of

impacts of the presence of women in politics (various offices), very little has explored the impacts of novelty. First, we draw on existing literature to argue that the *presence* of a female executive should positively influence women's attitudes, engagement, and participation but could have either positive or negative effects on men. We draw on three common arguments from the women in legislatures literature – shared identity, elite cues, and role model theories – to support the hypothesis that women may have more positive attitudes toward politics and engage and participate in politics more. For men, however, we argue that their responses could be positive if they are sociotropic in worldview (i.e., view what is good for women as more generally good for society and politics) or respond positively to elite cues, but their responses could be negative if they are egocentric in their worldview (i.e., view what is good for women as bad for men).

Second, we argue that the *novelty* of the “first woman” executive could have different effects than those of presence because the novelty of a “first” woman executive can carry with it increased expectations for change, greater media attention, and extensive emphasis on the woman's achievements as the first female executive (Gilardi 2015; Murray 2010b). We expect positive effects for women in society again because of their shared identity, the cues the achievement sends, and the role model benefits, but we expect these to result from the novelty of the woman, not just her presence in office. Men also may respond positively to the novelty of a first woman, if they predominantly have a sociotropic worldview. Novelty could have negative effects on men, however, if the average man has an egocentric worldview. The election of the “first woman” could raise concern about the encroachment of women into politics and the negative repercussions that could have for men.²

We test our hypotheses with an original survey experiment that used vignettes to describe a hypothetical male or female governor elected in a hypothetical state in Brazil that either had or had not elected a female governor previously. This 2 × 2 factorial design allows us to explore whether a female executive's presence and/or her novelty would have effects on women's and men's expected political attitudes, engagement, and participation. We used a survey experiment because it has two important advantages over an observational approach. First, a survey experiment reduces endogeneity concerns and permits causal inferences. Second, a survey experiment allows us to test the novelty hypothesis. Observational studies are limited in their ability to do this because few women in executive office have *not* been the first women elected to that office.

We conducted the survey experiment in Latin America, and specifically in Brazil, for several reasons. First, Latin America has elected more female presidents than any other region in the world (Jalalzai 2016), making the question about how female executives affect citizens highly relevant for a country in that region.³ Second, Brazil itself is a candidate-centered political system that makes heuristics, such as gender, highly relevant for voter evaluations of politicians (Boas 2014). Third, Brazil's federal system allows us to study gubernatorial offices where biases from well-known female presidents – at home and in the rest of the region – are less likely to emerge.⁴ We also use a hypothetical rather than a real governor to further minimize potential biases.

Our survey experiment reveals that the presence of a hypothetical female governor produces positive effects on women's expected political attitudes, engagement, and several types of political activity but has positive effects only on men's expected attitudes. It has no effect (neither positive nor negative) on what men report their engagement or

participation would be. Counter to expectations, however, novelty has few effects on either women or men. The only outcome it influences is that it increases women's expected approval of the governor and it decreases men's. Thus, in Brazil, we find evidence that the *presence* of a female governor could improve attitudes toward politics and increase engagement and participation but that the *novelty* of a first female governor is unlikely to have added benefit. These null findings for novelty are important – the extensive attention given to the novelty of electing the first woman executive by the media, women's rights advocates, and politicians may produce few symbolic effects on citizens after the election.

The impact of female executives

As mentioned previously, significant research shows that women's presence in office affects political attitudes, engagement, and participation. Yet, this research largely focuses on legislatures, has rarely established causality, and has not theorized about the effects of novelty or empirically disentangled the potential ways in which the novelty of a woman in office exerts different effects from the presence of “just another woman.” In this section, we justify our focus on executives rather than legislatures and develop hypotheses for the effect of the presence and then novelty of a female executive on women and men.

Why executives?

Although most research has focused on legislatures, the posited effects of women in office could extend to executives. Several recent comparative politics studies have started to explore this using observational data (Alexander and Jalalzai 2016; Jalalzai 2016; Kerevel and Atkeson 2015; Reyes-Housholder and Schwindt-Bayer 2016). Studying how female executives potentially influence citizens – either through presence, novelty or both – is as important, if not more important, than studying the impact of female legislators. First, executives tend to wield more institutional power than legislators. In Latin America, for example, chief executives at the national and sub-national levels not only execute laws but also dominate the law-making process (Shugart and Mainwaring 1997). Power differentials between the branches mean that citizens may pay more attention to chief executives than legislators, thereby creating the potential for stronger effects for executives.

Second, research on symbolic representation, specifically, suggests that executives also have the potential to represent in a symbolic manner and generate emotive responses as a result. Hanna Pitkin (1967) who first introduced the concept of symbolic representation provides non-legislative examples, drawing on monarchs, for example, and in no way restricts her concept of representation to legislatures. Hoffman (2001) argues that the executive exerts more symbolic power than the legislature, also suggesting greater effects for women in this arena of power. Jalalzai (2016, 14) argues that “symbolically, there is every reason to believe that the presence of a woman president is as potentially transformative as increased levels of women legislators and possibly even more so.”

Third, executive politics is more closely associated with masculine stereotypes than legislative politics. Executives are expected to carry out laws and make decisions individually

while legislators are expected to discuss laws and forge compromises collectively. Thus, the exercise of executive power is believed to require more masculine traits (e.g., assertiveness, decisiveness, and vertical leadership styles) than feminine ones (e.g., compassion, cooperation, and horizontal leadership styles) (Duerst-Lahti and Kelly 1995; Sykes 2009). For better or worse, female chief executives may attract more attention than female legislators because their gender identities are associated with atypical characteristics of chief executives. They also may have greater potential to change traditional gender stereotypes related to the appropriateness of political activity for women.

Fourth, citizens are more likely to know the sex of an executive than the overall percentage of a representative body that is female or even the sex of their own legislative representative. Citizens should be able to respond more accurately when they know the sex of an elected official, and therefore in the real world, executive sex might matter more than women's legislative representation. In sum, exploring the causal links between women's descriptive representation and citizens' attitudes, engagement, and participation is just as, if not more, important for executives than legislators.

The effects of the presence of a female executive

Building on existing literature and its arguments about the effects of women in politics on citizens, we hypothesize that the election, and consequent presence, of a woman in executive office should have positive effects on women's political attitudes, engagement, and participation but could have positive or negative effects on men's attitudes, engagement, and participation. We present the arguments behind these hypotheses for women, first, and for men, second. We argue that women are likely to respond positively to the presence of a female executive for several reasons. First, some women may feel a shared identity with women in office that could make them perceive of a female executive more positively than they would a male executive.⁵ Much existing literature finds that citizens from historically marginalized groups respond more positively toward elected representatives from their in-group than an out-group (Banducci, Donovan, and Karp 2004; Bobo and Gilliam 1990; Gay 2001; Pantoja and Segura 2003; Wolbrecht and Campbell 2007). This has been noted particularly in research on symbolic representation (Schwindt-Bayer 2010; Schwindt-Bayer and Mishler 2005), which has found that the presence of women in government has the "power to evoke feelings or attitudes" (Pitkin 1967, 97).

Second, the presence of a female executive can send *elite cues* to women about gender equality in government. Existing research has built upon elite cue theory to explain why increased women in legislatures or executives are associated with more positive attitudes among women of the cultural appropriateness of women in politics (Reyes-Housholder and Schwindt-Bayer 2016), more positive female views of government as responsive to women's issues (Reingold and Harrell. 2010; Wolbrecht and Campbell 2007), and greater engagement and participation of women in politics (Atkeson 2003; Hansen 1997). Atkeson (2003) takes this one step further and elaborates a viable cue theory to argue that it is not just the presence of women as a candidate in US Senate and gubernatorial elections that has an effect on political engagement and activity but the presence of a *viable* female candidate that matters. Thus, signals sent by the presence of a female executive could lead to more positive attitudes and increased engagement and participation.

Third, role model theories suggest that the presence of women in office demonstrates women's prowess in politics and can have positive effects on women, particularly young women (Atkeson 2003; Campbell and Wolbrecht 2006; Gilardi 2015; Wolbrecht and Campbell 2007). Women in office may serve as role models by their very accession to candidacy or political office and make women in society feel that they too can be accepted into and involved in politics. Inspired by the presence of a female executive, women may view government more positively, express greater political interest, follow political news more closely, vote more frequently or even campaign more (Wolbrecht and Campbell 2007).

We similarly argue that women's presence as executives may lead men to respond more positively in their attitudes, engagement, and participation in politics, however, for different reasons. One reason draws from scholarly literature that argues that men often display socio-tropic attitudes toward the political system (i.e., they see that what is good for one group can have benefits for all) and view government more positively when more women are in office (Schwindt-Bayer and Mishler 2005). Another reason builds from Kerevel and Atkeson (2015, 734) who use an "exemplar model of stereotypes" to argue that exposure to female leaders may cause men to "update their attitudes regarding stereotypical images or baseline preferences." This argument is similar to the Morgan and Buice (2013) argument that elite cues about the inclusion of women in cabinets produces greater support for gender equality among men in society. If men view government more positively under a female executive, have more positive attitudes toward women in government, and support gender equality more, they may also engage and participate more in the democratic system.

Alternatively, it is possible that the presence of female executives could decrease men's attitudes, engagement, and participation. This may occur because men possess a purely self-interested, egocentric view of representation (Schwindt-Bayer and Mishler 2005), believing that increasing representation of women decreases representation of men. They also may feel that they are losing their historical privilege. A recent study on gender quotas makes a similar argument about the negative effect of quotas on men: "if men perceive that quotas give women preferential treatment, they may begin to view politics as unfair or biased" (Franceschet, Krook, and Piscopo 2012, 18). If their reactions to the presence of women are negative, this could lead them to be less supportive of the female governor and feel less represented, and those feelings of exclusion could lead them to be less likely to engage and participate in the political system.

Drawing from these theories, we have three overarching hypotheses about citizens' responses to the presence of a woman in executive office:

H₁: The presence of a female chief executive will exert a *positive* impact on *women's* political attitudes, engagement, and participation in politics, on average.

H_{2a}: The presence of a female chief executive will exert a *positive* impact on *men's* political attitudes, engagement, and participation in politics, on average.

H_{2b}: The presence of a female chief executive will exert a *negative* impact on *men's* political attitudes, engagement, and participation in politics, on average.

The effects of the novelty of a female executive

Existing literature has not developed nearly as much theoretical reasoning for how and why the novelty of electing the "first woman" to an executive office could matter;

however, rhetoric about the monumental feat runs rampant in elections that could elect a “first woman” and is major news when it occurs. Hillary Clinton’s clinching of the Democratic nomination in July 2016 was heavily laden with talk about the magnitude of this milestone just as the elections of Michelle Bachelet, Dilma Rousseff, and Laura Chinchilla were when they became the first female presidents of their countries. As reported in a news story not long after Bachelet’s inauguration in 2006,

Michelle Bachelet remembers the day of her inauguration as Chile’s first woman leader with pride: “They were very beautiful moments. I remember the feeling of joy. In the streets, thousands of women and children put on presidential sashes. It meant everyone was going to La Moneda [the Presidential Palace] together with me.” (Dixon 2006)

If being the “first woman” garners so much attention, particularly from women, then it could have effects on citizens’ attitudes, engagement and participation separate from the mere presence of a woman in office.

Yet, very little research has explored the difference between presence and novelty when studying the consequences of electing women to office. In one of the few works that discusses novelty, Murray (2010b) suggests that media framing surrounding the “first woman” in any political office can influence public perceptions of women in politics.⁶ In a study that implicitly addresses novelty, Broockman (2014) examines whether adding women to the legislature after the election of the “first woman” affects voter turnout. He finds no significant impact beyond the first women, however, suggesting that novelty may be a key part of generating citizen responses to women in office. Gilardi (2015) investigates whether the effect of women in parliament diminishes over time, which would occur if novelty is what really drives effects produced by women in parliament. His observational data on municipal Swiss elections show that women’s election does affect other women’s motivation to run for office, in general, but he also finds that new female candidates largely drive this positive relationship. These studies suggest some initial support for a hypothesis that novelty may affect citizen response to women in office, and do so positively, but the topic needs more explicit theoretical reasoning and empirical testing.

We expect the election of a “first woman” to have positive effects on women; however, it could have either positive or negative effects on men. We argue that novelty may matter differently, and perhaps more, than the mere presence of a female executive matters for three reasons. First, the election of the “first woman” to an executive office may create greater expectations of political change than the election of “just another woman.” In many countries, particularly in Latin America, the election of the first female president has occurred at times when citizens are frustrated with and disillusioned by democracy and incumbent political elites and are seeking new and fresh faces in politics (Barnes 2016; Ríos Tobar 2008; Skard 2015). Citizens may expect an outsider politician to attempt to pursue more transformative reforms and govern differently. Being the “first woman” executive, then, carries with it expectations of change and improvements to politics because the politician is from an “outsider” group that has been historically excluded from politics (Murray 2010b). Second, the election of a “first woman” generates greater media attention and coverage. When the first woman is running for office, the media plays up the unprecedented fact that the woman could be being the “first female” executive and highlights the milestone crossed (Murray 2010a; Wiliarty 2010). Novelty is much

more newsworthy than presence. Third, “first females” may be associated with greater achievement and the prospect of even more achievement in office than more “run-of-the-mill” female executives because they are the first to break the “glass ceiling” for that office. The “first woman” executive is not only a woman, but also a woman who has beaten the odds, defied the male political establishment, and shunned traditional gender stereotypes to win office.

Because novelty creates greater expectations of change, generates greater media attention, and highlights the achievement of women breaking the glass ceiling in ways that presence does not, it could have different and likely stronger effects than the mere presence of women in executive office. For women, we expect novelty to have a strong positive effect on political attitudes, engagement, and participation because, as we highlighted in the last section, women are more likely have a shared identity with the first woman executive, respond to the cues sent by the election of the first woman, and view the first woman as a role model. All of these effects should be stronger for the first woman executive because of the expectations of change associated with her election, the greater media attention her election garners, and the achievements she has attained, that is, the *novelty* of her election.

Men also may respond positively to the election of a first female executive. Men and women are both highly dissatisfied with democracy in settings where outsiders, such as women, win office (Schwindt-Bayer 2010). Both women and men have voted for those women and helped get them into office. As a result, the expectations of change and the feelings of hope associated with the election of that “first woman” may correspond to more positive attitudes toward women and politics and greater engagement and participation for both women *and men* after the election. Additionally, men may have a socio-tropic outlook on politics, which even if they did not vote for the woman executive, her election could lead them to respond positively to the media attention surrounding the election of the first woman in office and the attention to her accomplishments because they view the groundbreaking election of a first woman as good for gender equality, good for women and men, and good for democracy. This could lead to more positive political attitudes and greater engagement and participation in democracy.

It is possible, however, that men could respond negatively to the election of a “first woman.” If men have more egocentric worldviews and see the entry of women into traditionally male domains, such as politics, as bad for men, then they may react negatively, and this response is likely to be particularly strong for the “first woman” elected to the position.⁷ The increased anticipation of change could cause privileged groups who are satisfied with the status quo, particularly men, to fear the election of the first woman. The media’s increased coverage and subsequent gender framing could suggest that the new female executive is not competent, which could lead men to react negatively to her election. Additionally, those who prefer traditional gender roles, may feel particularly threatened when they see a woman break the glass ceiling. They may disapprove of a woman who defies societal and political conventions rather than applaud her. This could exacerbate their concerns about the influx of women into politics and emphasize the negative repercussions that it could have for men. As a result, if men, on average, have egocentric worldviews, they should be less supportive of a first female, be less interested in politics, be less likely to engage in politics through political discussion, and be

unlikely to participate in political activities during her term in office. Novelty could impact them negatively.

This yields three hypotheses about the effect of the novelty of a female executive on women and men:

H₃: The novelty of a “first woman” chief executive will exert a *positive* impact on *women’s* political attitudes, engagement, and participation in politics, on average.

H_{4a}: The novelty of a “first woman” chief executive will exert a *positive* impact on *men’s* political attitudes, engagement, and participation in politics, on average.

H_{4b}: The novelty of a “first woman” chief executive will exert a *negative* impact on *men’s* political attitudes, engagement, and participation in politics, on average.

Testing for effects of presence and novelty: a survey experiment

We test the presence and novelty hypotheses with a survey experiment in Brazil that was conducted in April 2016.⁸ We selected a survey experiment for our empirical analysis for two reasons. First, observational data only allow correlational inferences between the election of women to office and citizen attitudes, engagement, and political activity. Obvious endogeneity concerns cast doubt on a causal interpretation of results from observational studies. For example, does the presence of a female executive independently inspire female citizens to participate more, or does greater participation by female citizens increase the likelihood of a woman winning executive office? A survey experiment is a better tool to reduce these endogeneity concerns and permit credible causal inferences. Additionally, observational studies have yielded mixed findings. Whereas many studies show significant and positive relationships between women’s descriptive representation and citizen attitudes, engagement, and participation, other studies find no relationship (Broockman 2014; Dolan 2006; Karp and Banducci 2008; Kittilson and Schwindt-Bayer 2010; Koch 1997; Lawless 2004). An experiment can help adjudicate among these contradictory results by providing more precise estimates of the effects of descriptive representation.⁹

A second reason to conduct a survey experiment is because it allows us to separate the effects of presence and novelty, which are often inextricably linked in the real world. Existing observational studies of the impact of female executives are limited by the fact that very few women in executive office have *not* been the first women elected to that office (Alexander and Jalalzai 2016). To date, 68 countries have experience with a female chief executive. Only 17 have had more than one, and although some countries have re-elected the same female chief executive, no country has popularly elected more than one female president (Jalalzai 2016). A similar phenomenon occurs at the sub-national level in countries with federal systems. This means that, in practice, a female executive is usually also the “first female executive” of a particular country or state. A survey experiment is better suited to parse out the effects of presence and novelty.

Our hypotheses on the impact of female presence and novelty could apply to virtually any democratic region in the world where both women and men can compete for executive office. Yet, we chose to conduct the experiment in Latin America because of the recent political relevance of female executives and the importance of understanding their consequences in a region where women’s election to executive office is increasing. Latin

America is a region characterized by gender inequalities in politics at the mass level, with male citizens engaging and participating more than females (Desposato and Norrander 2009; Reyes-Housholder and Schwindt-Bayer 2016). At the same time, female presidents have won the presidency more times there than any other region in the world (Jalalzai 2016). Nicaragua, Panama, Chile, Argentina, Costa Rica and Brazil have elected female presidents and over two thirds of Latin American countries have experienced at least one viable female presidential candidate (Thomas and Reyes-Housholder 2015).¹⁰ Over the past 10-15 years, it has become increasingly common in the region to be governed by a female president or at least know that a female president governs a neighboring country.

We conducted the experiment specifically in Brazil because of its candidate-centered political system, the prevalence of gender heuristics in voting, and its federal system. First, Brazil uses open-list proportional representation for legislatures and a majority run-off system for the executive that has led to a proliferation of political parties and a weak party system. This, in turn, has weakened party discipline (Mainwaring and Liñan 1997), and elections and executive and legislative politics have become more individualistic and candidate-centered than party-centered (Ames 1995; Samuels 2002, 2003). This type of system allows characteristics of individual candidates and elected officials, such as gender, to play more of a role in politics than they would in a party-centered system. And, in fact, recent studies have shown that Brazilians use identity-based heuristics, including candidates' religious and professional titles, to decide their votes (Boas 2014, 2016; Boas and Smith, *forthcoming*). Once voters begin to use those types of heuristics for elections, they are likely to be relevant in evaluations of in-office politicians too. Given that gender is another easy-to-use heuristic (McDermott 1997, 1998), we expect Brazil to be a case where gender heuristics are at work.

Finally, Brazil's federal system creates opportunities to study female executives at the subnational level. We look at governors for several reasons. While some of Latin America's female presidents have been enormously popular, others have suffered from extremely low public approval ratings (Thomas and Reyes-Housholder 2015) and Dilma Rousseff, herself, was recently impeached. This could bias evaluations of female presidents. Focusing on the subnational level helps to disassociate predispositions derived from specific female presidents, such as Rousseff, from the responses we elicit from citizens. Biases associated with feelings and attitudes about a particular woman are less likely to matter when we test our hypotheses at the subnational level in Brazil. Although female executives are still uncommon, Brazil has elected seven female governors. We focus on the state rather than municipal level because governors hold significant political power in Latin America's federal systems – like presidents, governors not only execute laws but also tend to dominate the legislative process – making them comparable (though certainly not identical) to national executives.

Survey experimental design

We designed a survey experiment to explore the effect of both female presence and novelty on citizen attitudes, engagement, and participation. We employ a 2 × 2 factorial design with one factor being the sex of the governor (male or female) to capture presence and the other factor being the history of female governors in the state (had a female governor or never had a female governor) to capture novelty. This design allows us to fully parse out

presence and novelty effects by comparing survey responses under male and female governors where the presence of a female governor is novel or not novel. The design produces four treatment groups, as illustrated in [Figure 1](#).¹¹

We designed four treatment prompts that provided information about a hypothetical governor. Specifically, we asked the respondents to imagine they live in a different state, but in a neighborhood like their own, and then to evaluate a recently elected governor of that state. Providing vignettes that ask respondents to situate themselves in a different state but similar neighborhood is an experimental method that aims to reduce social desirability bias and has been used in many survey experiments dealing with topics that people may be disinclined to answer truthfully, such as corruption or gender and sexism (Schwindt-Bayer and Tavits 2016; Winters and Weitz-Shapiro. 2013). In our case, we are aiming to minimize bias from Brazil’s current female president or any female governor that a respondent has had personal experience with in their own state. Vignette experiments, such as this, have been found to have high external validity, making us more confident that our design is capturing the choices most respondents would make in “real-world” situations (Hainmueller, Hangartner, and Yamamoto. 2015).¹²

All information that the vignettes provide about the state and governor is the same across the four treatment groups except the sex of the governor and the history of female governors in that state.¹³ We described the hypothetical governor as “moderate” rather than “centrist” in order to downplay the significance of party ideology in Brazil, a country where the main cleavage among parties is not left-right, but whether the party supports the executive party in power (Samuels and Zucco 2014). [Figure 2](#) presents the content of each treatment. Treatments 1 and 3 present male governors, varying whether the state has had a female governor in the past (T3) or not (T1). Treatment 2 presents a case of a female governor who is not the first woman elected governor. Treatment 4 presents a female governor who is the first woman elected governor of that state.

Survey respondents were randomly assigned to a treatment and asked a series of questions about their political attitudes, engagement, and activity under this governor.¹⁴ These questions are our dependent variables.¹⁵ We measure political attitudes with four questions. The first two relate to symbolic representation (i.e., the extent to which citizens feel represented and emotively respond to a representative as a symbol (Pitkin 1967)), specifically: (1) How strongly would you approve or disapprove of this governor? and (2) How represented would you feel with this governor in office? The others relate to the cultural appropriateness of a female executive (Kerevel and Atkeson 2015; Morgan

		Sex of Governor	
		Male	Female
History of Female Governors	No	T1	T4
	Yes	T3	T2

Figure 1. 2 × 2 factorial design.

<p>Treatment Group #1 (male governor, no history of female governor) Imagine you live in a neighborhood like yours, but in a different state. In that state, a man from a moderate party (neither extreme right or extreme left) was just elected governor. In the past, the state has never had a female governor. The new governor promises to create jobs, improve access to healthcare and education and fight crime and corruption. His approval ratings are fairly high, and he has strong support from many citizens in the state.</p>
<p>Treatment Group #2 (female governor, history of female governor) Imagine you live in a neighborhood like yours, but in a different state. In that state, a woman from a moderate party (neither extreme right or extreme left) was just elected governor. In the past, the state has had both male and female governors. The new governor promises to create jobs, improve access to healthcare and education and fight crime and corruption. Her approval ratings are fairly high, and she has strong support from many citizens in the state.</p>
<p>Treatment Group #3 (male governor, history of female governor) Imagine you live in a neighborhood like yours, but in a different state. In that state, a man from a moderate party (neither extreme right or extreme left) was just elected governor. In the past, the state has had both male and female governors. The new governor promises to create jobs, improve access to healthcare and education and fight crime and corruption. His approval ratings are fairly high and he has strong support from many citizens in the state.</p>
<p>Treatment Group #4 (female governor, no history of female governor) Imagine you live in a neighborhood like yours, but in a different state. In that state, a woman from a moderate party (neither extreme right or extreme left) was just elected governor. In the past, the state has never had a female governor. She is the first female governor of the state. She promises to create jobs, improve access to healthcare and education and fight crime and corruption. Her approval ratings are fairly high and she has strong support from many citizens in the state.</p>

Figure 2. Experimental treatments (translated from Brazilian Portuguese).

and Buice 2013) and the responsiveness of a female executive: (1) How strongly would you agree or disagree that men make better political leaders than women do with this governor in office? and (2) How strongly would you agree or disagree that this governor will focus on the political issues that people like you think are important? We then follow Kittilson and Schwindt-Bayer (2012) and define political engagement as “psychological orientations toward politics” (Burns, Schlozman, and Verba 2001, 335), which we measure with three standard survey questions about (1) interest in politics, (2) political discussion, and (3) following politics in the news. We also measure political participation with standard survey questions about (1) local meeting attendance and (2) willingness to work on a campaign.¹⁶ Respondents could choose one of the four or five responses categories for each question.

We hired Netquest out of São Paulo, Brazil to field the experiment. They surveyed a convenience sample of Brazilians – a common sampling technique for these kinds of studies in Latin America (Boas 2014, 2016; Samuels and Zucco 2014) and elsewhere. A convenience sample is not necessarily a representative sample, but Netquest’s panel does include Brazilians from every major region and features a fairly balanced dispersion in terms of social class.¹⁷ More importantly, a convenience sample is appropriate when the primary purpose of the survey experiment is to test for causal effects, which is exactly what our study aims to do. We surveyed a total of 1600 individuals, 800 men and 800 women, aiming for approximately 200 male and 200 female respondents per treatment group.¹⁸

Other studies using approximately 200 observations per cell have detected causal effects of voter heuristics (Boas 2014; Samuels and Zucco 2014). We are confident that this number will provide enough power to detect possible causal effects of female presence and novelty.

Data analysis

We test our hypotheses by analyzing a cross-tabulation of responses in the four treatment groups for men and for women. Specifically, we test whether the hypothetical presence of a female governor would affect respondents' attitudes, engagement, and activity by comparing T1–T4 and T3–T2, which vary sex of the governor but not history with female governors. With these comparisons, we can see how men and women would respond to the presence of a female governor under two conditions: 1) not having had a female governor before (i.e., when it is novel), and 2) having had a female governor before (i.e., when it is not novel). We test the novelty of a female governor hypothesis directly by comparing T2–T4, which holds constant having a female governor but varies whether the state has had a female governor or not. In other words, this tells us whether respondents living under a female governor would think/act differently if that female governor was the first woman in office or not. It captures the extra effect of novelty above and beyond presence. A comparison of T3–T1 holds constant having a male governor and varies whether or not having had a female governor in the past affects attitudes, engagement, and activity. This reveals whether those in treatment groups with a male governor are influenced at all by having had a female executive at some time in the past. Finally, our factorial design gives us an opportunity to test combined effects (or interactions) of presence and novelty. Specifically, we can compare those in treatment groups with a male governor but who had a woman executive before to those in treatment groups where the presence of a woman was something entirely new (T3–T4), and those in treatment groups with a male governor but no past experience with a woman in the office to those in treatment groups with a female governor but one who is not new (T1–T2)

We report chi-square tests of whether the distribution of responses across treatment groups is significantly different or not. We present crosstabs because our measures of political attitudes, engagement, and activity are all ordered categories from 1 to 4 or 1 to 5. The distribution of responses across all categories is relevant, and it makes little sense to compare mean responses because a response of 2.5, for example, is not a real value on our dependent variable. Assessing the *percentage* of people who responded “very little” (“1”) or “a lot” (“4”) and comparing those percentages across treatment groups is more appropriate. Presenting the results this way is also justified because our survey experiment was well balanced on relevant demographics (age, social class, race, geographic region).¹⁹ Thus, additional econometric modeling is unnecessary.²⁰

Findings

Figure 3 presents the distribution of responses for men and women across the four treatment groups. The *p*-values above the male and female analyses indicate the significance of the chi-square estimate for the distribution, and thus reveal the extent to which respondents are proportionally represented across the treatment groups for men and women. Where the chi-square is $p < .05$, significant treatment effects exist. Recall that treatments

1 and 3 are male governors, varying only in their past history with a female governor, treatment 2 is a female governor (but where women have been governor before), and treatment 4 is a first female governor. We can compare the percentage of respondents in each category of each treatment group to assess the effects of presence of a female governor and novelty.

Overall, the analyses reveal significant differences across treatment groups for *women's* expected political attitudes, political engagement, and political activity (to a lesser extent). They also reveal significant differences for *men's* expected political attitudes but not their engagement or political activity. The *p*-values presented in Figure 3 are for analyses that include all survey respondents, regardless of how they did on the manipulation checks, so they are conservative estimates. If the analyses are narrowed to only those who got both of the manipulation questions correct, even stronger effects emerge for some of the more borderline *p*-values.

Beginning with political attitudes, the analyses reveal significant differences across treatment groups for how strongly women and men would approve of the hypothetical governor, feel represented by the hypothetical governor, and perceive of the hypothetical governor's responsiveness to issues of concern.²¹ For approval, our survey experiment suggests different findings for women and men, as we expected. For women, presence and novelty both increase approval, but novelty more so. A hypothetical governor has the largest percentage of women saying they would strongly approve when that governor

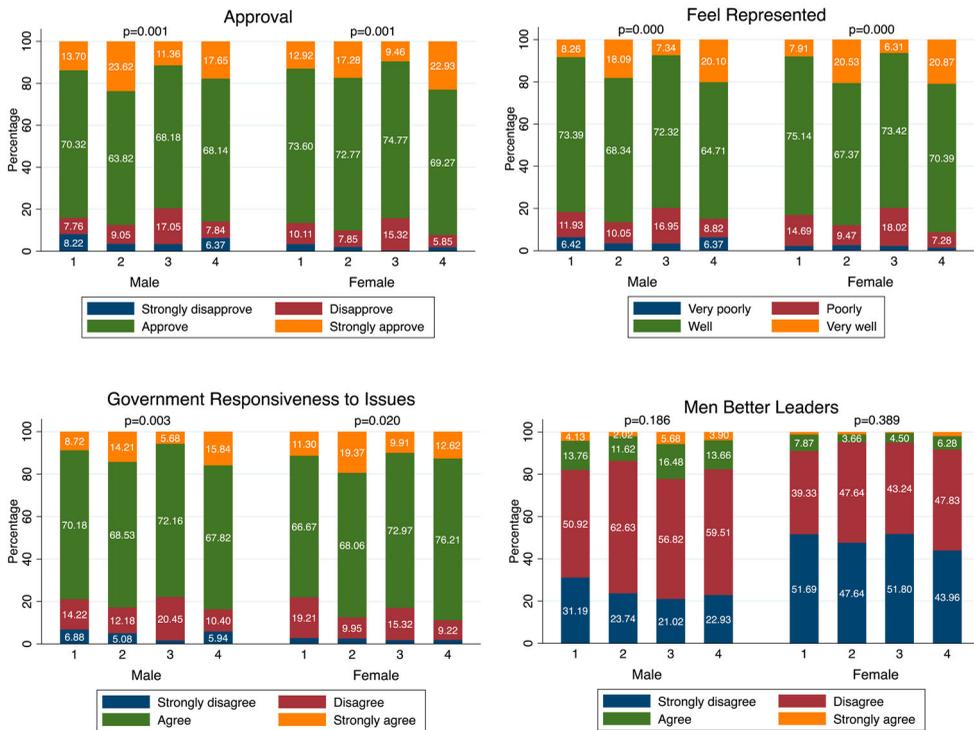


Figure 3. Survey experiment results (percentage of respondents in each dependent variable category by treatment group and sex).

Note: T1 = male governor, no history of female governor; T2 = female governor, history of female governor; T3 = male governor, history of female governor; T4 = female governor, no history of female governor.

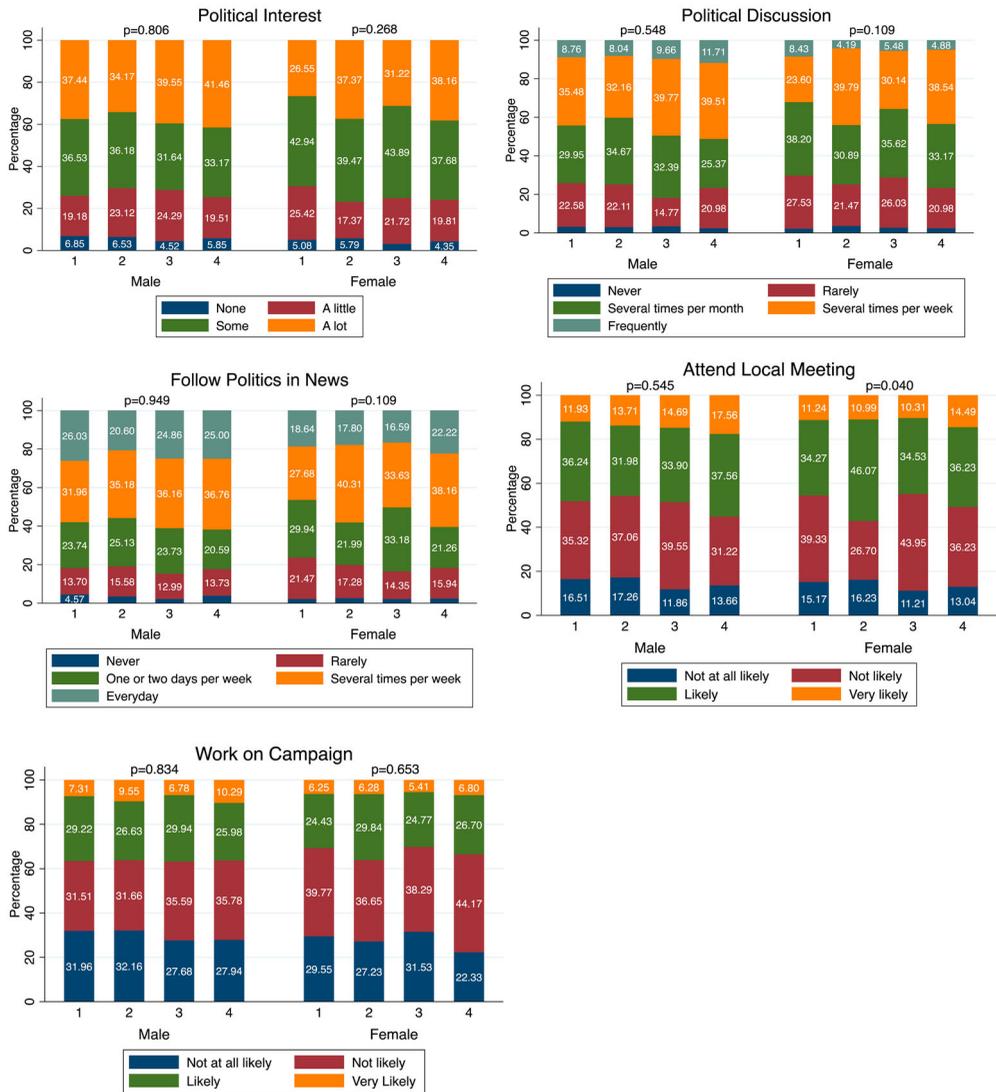


Figure 3. Continued

is presented as the first female governor of the state – 23% said they would strongly approve in treatment 4. Only 13% and 9% of respondents given a treatment where the governor is male said they would strongly approve of the governor (T1 with no history of female governors and T3 with a history of female governors), statistically significant differences of 10% (T4–T1) and 14% (T4–T3), respectively. The percentage of respondents who say they would strongly approve of the first female governor is also significantly larger than for treatment 3 with a female governor who is not the first female governor of the state, 17%. All of this suggests a strong effect for novelty on approval of the governor. The presence of a female governor also has a significant effect on approval, however. The difference between the percentage of respondents who say they would strongly approve of a non-novel female governor (T2) and those who say they would strongly

approve of a male governor is 4%, when there is no history of a female governor (T1), and 8% (T3), when history with female governor is held constant. Thus, for women, presence matters, but the combination of presence and novelty has the strongest effect on approval of the governor. This finding supports our hypotheses.

For men, we find that they also respond positively to the presence of a hypothetical female governor. Twenty-four percent of men say they would strongly approve of a female governor compared to only 11% who would strongly approve of a man in office, holding past history with a female governor constant (T2–T3). Novelty, however, depresses men's approval of female governors. Whereas 24% of men say they would strongly approve of a female governor when that woman is not the state's first female in that post (T2), only 18% would say that of a first female governor (T4). Men approve of the presence of women governors but do so more when women have a history in office rather than when their election is novel.

For feeling represented, [Figure 3](#) shows that results are very similar for women and men, and in both cases, the presence of a female governor rather than novelty affects citizen responses. Treatment groups 2 and 4, a comparison of which directly tests the novelty hypothesis, have a very similar distribution of responses, suggesting that novelty is not at work for women or men. Twenty-one percent of women say they would feel very well represented under a female governor and that percentage is the same regardless of whether the woman is the first woman or not (T4 and T2). For men, the difference is a mere 2 percentage points (18% in T2 and 20% in T4). However, large and statistically significant differences do appear when comparing the treatments that test the presence effect (T4–T1 and T2–T3), and they appear for both women and men. For women, 21% say they would feel very well represented under a female governor when no woman has been in office before compared to 8% under a male governor with no history of female governors (T4–T1), and 21% say they would feel very well represented under a female governor when a woman has been in office before compared to only 6% under a male governor with a female governor history (T2–T3). The differences are similar in size for men. The double treatments also produce strong and significant findings (T1–T2 and T3–T4). For these, though, the lack of differences in the T2–T4 novelty tests suggests that it is presence and not novelty that is driving the double treatment effects.

We find similar results for government responsiveness. The largest effect is for presence, not novelty, and the effects are similar for women and men. Nineteen percent of women say they would strongly agree that a female governor will respond to their issue priorities when there is a history of women in office (T2) compared to only 12.6% of women under a novel first female governor (T4). This suggests that experience with prior women in office would give women confidence that another woman holding the office will represent issues that they are interested in whereas novelty would depress that to levels that are similar to how women feel under a male governor. Under male governors, regardless of the history of women in office, only 11% and 10% of women (treatment groups 1 and 3, respectively) say they would strongly agree that the governor will respond to issues they are interested in.

For men, we also see an effect for presence of a female governor but not for novelty. Fourteen percent and 16% of men in treatment groups 2 and 4, respectively, say they would strongly agree that a female governor will respond to their issue concerns and

these percentages are similar regardless of the fact that one treatment group has a history of women in office whereas the other has no history of women in office. And, both of these percentages are higher than the “strongly agree” response category for male governors – 9% and 6% for treatment groups 1 and 3, respectively.

The last political attitude that we examined was cultural appropriateness of having women in executive office. Figure 3 shows that the majority of respondents, male and female, would disagree or strongly disagree with the statement that men make better political leaders than women. However, the intensity with which they would disagree varies. Nearly twice as many women than men say they would “strongly disagree” compared to just “disagree.” Comparing across treatment groups, we see little evidence that presence or novelty matters for women. T2 and T4 (female governors) have slightly more women disagreeing and strongly disagreeing than T1 and T3 (male governors) do, but it is not statistically significant.

Presence does matter for men’s attitudes toward women as political leaders, however. The overall p -value of .186 for men becomes .017 when the analysis is limited to those who got both manipulation checks correct and the percentage who disagree in T2 becomes 68% rather than 63%, and in T3 it drops to 51% down from 57%. This exacerbates the difference already apparent in Figure 3 that more men would disagree that men make better political leaders when a woman is governor than when a man is governor. This finding is the same as what Kerevel and Atkeson (2015) and Morgan and Buice (2013) found. Our study adds, however, confirmation of causality – the causal arrow does run from women’s presence to cultural appropriateness and not the other way around.

Interestingly, more men with male governors would agree that men make better political leaders when the state has had a female governor before (16.5%) than when it has not had one (13.8%) (T3–T1). This effect is strengthened when only those who got the manipulations correct were compared (21% in T3 agreed that men make better leaders compared to 12% in T1). This suggests some kind of negative response to a history of a woman governor when hypothetically governed by a man.

For the remaining dependent variables, we see a pattern of responses suggesting that presence rather than novelty is what influences women’s engagement and political activity. More women say they would respond positively when a female governor is in office than when a male governor is in office, regardless of the history of a female governor. This is apparent for political interest, political discussion, following politics in the news, campaigning, and attending local meetings. Although the p -values in Figure 3 are only borderline significant for women’s political interest, discussion, following politics in the news, they become more significant when analyses are limited to only those who got the manipulation questions correct – political interest changes from 0.268 to 0.07 and political discussion and news move from $p = .10$ to $p < .01$. Thus, we are confident that the engagement effects are actually quite strong. Differences in women’s responses across treatments for attending local meetings, however, become less significant when only those who got both manipulation checks correct are studied ($p = .35$). Also, the findings for a presence effect on women’s political activity are weaker than those for engagement. The absence of differences in treatment groups 2 and 4 suggests that it is presence rather than novelty that drives women’s higher engagement in these scenarios.

For men, few significant differences emerge on the engagement and activity measures. Slightly more men say that they would be likely or very likely to attend a meeting with a

“first female” governor (T4) as compared to all of the other three treatment groups but the chi-square test is not statistically significant for men in [Figure 3](#). Perhaps curiosity around the novelty of a woman inspires them to attend a meeting with the first female governor of a state. For political discussion, T4 yields more men saying they would discuss politics several times per week rather than several times per month as compared to the other treatments (and that effect is not statistically significant), and the overall reported participation of several times per month, several times per week, or frequently is no different across treatments.

In sum, our survey experiment reveals several important findings. As hypothesized, the presence of a hypothetical female governor affects women’s expected political attitudes, engagement, and activity (meetings only and to a lesser degree). Counter to our hypotheses, however, novelty has few effects on women. It increases the extent to which women would approve of a governor but it has no additional effect on other attitudes or behaviors. For men, we find that presence does not affect men’s expected political engagement or political activity (similar to some previous studies, particularly [Atkeson and Carrillo \(2007\)](#); [Reingold and Harrell \(2010\)](#)), but as we hypothesized, it does improve their expected approval of female governors, how represented they feel, whether they think the governor will respond to issues they would be concerned about (they think a female governor will be more responsive than a male governor), and how appropriate they would view the inclusion of women in politics to be. Novelty effects, however, are just as minimal for men as they are for women. Novelty only affects men in that it makes them say they would be less approving of female governors. In all other areas, it has no significant effects.

Conclusion

This project explores the causal impact of the presence and novelty of female executives with a survey experiment in Brazil. We hypothesized effects for both female presence and novelty on citizens’ political attitudes, engagement, and participation, and we tested this with a survey experiment asking a sample of Brazilians to evaluate what their political attitudes, engagement, and activity would be under a hypothetical governor. The vignettes randomly varied the sex of the governor and history with female governors. We found relatively strong effects for presence but few effects for novelty, and the presence effects appeared for more measures of attitudes and engagement for women than they did for men.

This paper makes several contributions. First, we have shifted attention on the societal consequences of descriptive representation from legislatures to executives, finding effects of the election of women to executive office for women and men. This helps bolster arguments for increased representation of women across more diverse political offices than just legislatures ([Phillips 1995](#)). Second, our experimental approach suggests causality, not just correlation, in the relationship between descriptive representation and political attitudes, engagement, and participation. Third, we show that causal effects can vary across attitudes and behavior for both women and men in Brazil. The presence and novelty of a hypothetical female executive boosts women’s symbolic representation, measured as approval of the governor, but presence without novelty was more important for men. For the other measure of symbolic representation, feeling represented, presence alone increased men’s and women’s responses of how well-represented they would feel. More men and

women also say they would think that government would be more responsive to issues they are concerned about when a governor is female. Causal effects of the presence of a female governor also exist for women's political engagement but are weaker for political activity. For men, they are largely non-existent for engagement and activity. Parsing out these different effects across different types of citizen outcomes can help to guide future research.

Our experimental findings suggest that the election of women to executive office could have effects on citizens. However, much research remains to be done on questions related to how the presence and novelty of female executives influence women's attitudes and behavior. Although we found significant effects for presence on women, we found few effects for novelty on women. This runs counter to conventional wisdom and our theory that that novelty should boost women's symbolic representation, views of the appropriateness of women in office, perceptions of government responsiveness to citizens, political engagement, and political activity. It may be that novelty simply has few additional effects, despite the increased expectations of change, greater media attention, and emphasis on female achievement that novelty highlights. Alternatively, however, novelty may need to be tested in a more nuanced way. We examined novelty effects simply by providing information about whether or not a state has had a history of women in the executive. We did not provide information about media coverage of the election of a "first woman" or what the election of a "first woman" could mean for politics in the state. It may well be that it is not so much whether or not a woman has served before that generates "novelty" but the type of media attention and social hype that often surrounds the election of a first woman that generates a novelty effect. We leave it to future research to test how media and social framing of "first women" executives could produce different novelty effects for women.

Additionally, we do not explore time constraints for a novelty effect. If future research explores how novelty is created and finds effect for novelty, then it would also be important to explore how long it takes for a novelty effect to wear off. Gilardi (2015) and Brookman (2014) suggest that it does wear off for legislators, and Kerevel and Atkeson (2015) find the same for mayors in Mexico. But, how long that takes (over the election of multiple executives or during one executive's term in office) and how needs to be explored. This is another important question that future research, particularly experimental research, can evaluate.

We also do not test the causal mechanisms for why female presence in executive office produces effects on attitudes, engagement, and activity of women. We theorized, for example, that the effect of presence has to do with shared identity and rational and symbolic expectations about having a woman in office, but in this project, we do not directly test the mechanisms linking female executives' presence to citizen responses. Distinguishing which effects are driven by rational calculations about the sex of an executive as compared to emotional evaluations (i.e., symbolic representation) is fertile ground for future research.

Finally, experiments of this kind have limited external validity, particularly in a country where not everyone can access the Internet.²² We acknowledged above that the convenience sample we employed serves our purposes of establishing causality but does not guarantee a representative sample. We tried to maximize external validity by making the treatments as realistic as possible, and at the same time, minimizing potential bias.

However, the best way to enhance the external validity of these findings would be to replicate the experiments in other countries of other regions of the world, particularly those where socioeconomic development may be higher and more people may have Internet access, and to do so with fully representative samples and actual experiences rather than vignettes.

In sum, women in executive office can influence citizens' political attitudes, engagement, and activity. According to our study of citizen responses to subnational governors in Brazil, impacts occur mainly through presence rather than novelty, which has more ambiguous effects, and those impacts differ for men and women and across types of attitudes and behavior. But, the findings do suggest that descriptive representation and symbolic representation may be linked through women in the executive, particularly in Brazil. Future research on other countries and at other levels of government will help broaden the scope of these findings.

Notes

1. These female presidents are Violeta Chamorro 1990; Mireya Moscoso 1999; Michelle Bachelet 2005, 2013; Cristina Fernández de Kirchner 2007, 2011; Laura Chinchilla 2010; Dilma Rousseff 2010, 2014. Prime minister Janet Jagan was elected prime minister in 1997 in Guyana and later served as the country's president. Isabel Perón in Argentina was not elected president, but became the world's first female president upon the death of her husband, Juan Perón, in 1976.
2. We expect negative effects to be limited to men because even though *some* women might respond negatively to a "first woman," it would have been impossible for the female executive to have been elected at all if the majority of both groups had concerns about a "first woman" executive.
3. Brazil itself has had some experience with female executives. It has had one female president and seven female governors since 1994 such that the presence of a woman in office is not unheard of. This experience, however, is uncommon enough, particularly at the subnational level, that we can test novelty arguments with less bias than in countries where experience with female governors is more commonplace.
4. We took several steps when designing the experiment to minimize possible bias resulting from Brazil's first female president, Dilma Rousseff. These are discussed in detail in the survey design section of this article.
5. Of course, women have myriad identities of which gender is only one. But, it is one that most men do not share and thus may provide a linkage between women in society and a female executive by which the symbolic effects of women's presence may operate.
6. Murray's book raises the issue of novelty but the candidates, presidents, and prime ministers studied in Murray (2010b) were nearly all "first women," making it difficult for the edited volume's authors to disentangle the effects of novelty from the effects of presence in empirical analysis.
7. Men's negative response to women's election may, in fact, decline over time as they are socialized to the inclusion of women in politics, but we do not explore the rate at which it happens in this study.
8. Our survey experiment received IRB approval from both Rice University and Cornell University.
9. An experiment can also provide more information about the extent to which endogeneity is a concern for existing literature. If experimental evidence *does demonstrate* a causal effect, then this supports the idea that positive results from observational studies *are not purely products of endogeneity*. If experimental evidence *does not demonstrate* a causal effect, then this may give credence to the idea that the positive results from observational studies *are* products of endogeneity.

10. A viable candidate is defined as having obtained at least 15% of the vote in the first round.
11. We conducted pre-tests with students in Rio de Janeiro, Brazil, to refine our survey questionnaire before conducting the final survey experiment that we present in this paper.
12. Of course, experiments in and of themselves are weak on external validity (Morton and Williams 2010) without additional analysis, and we do not argue that our findings from this experiment are definitive.
13. We included two manipulation checks after participants read the treatments but before they answered the survey questions. The first manipulation check asked what the sex of the hypothetical governor was (male/female), and the second asked whether the governor was the first man or woman to take office. Surprisingly, only 65% of respondents got both tests correct (83.6% got the first manipulation check correct and 75% got the second correct). Because of this low score, we ran additional analyses with just those respondents who got both correct (which only improved our results) and we controlled for a respondent's success on the manipulation tests in our multivariate models.
14. Note that we modeled the survey questions on existing questions in the World Values Survey and AmericasBarometer surveys. All survey questions use the conditional tense (i.e. "What *would* you do ... ?) to emphasize the hypothetical nature of the situation. We do this to try to avoid respondents answering the questions according to how they felt about their current female president, Dilma Rousseff, whose popularity had hit record lows, or a female governor that may be in office in their home state. Notably, Rousseff never served as a governor in Brazil, further minimizing concern that she would bias our results.
15. The appendix includes a complete list of survey questions in the order they were asked in English and Portuguese.
16. Voting is an obvious political activity that would be of interest in a project like this. But, in Brazil, voting is compulsory so asking about voting makes little sense.
17. For details on Netquest's Brazilian panel characteristics, see http://www.netquest.com/papers/panelbook_en.pdf, page 3.
18. The sex distribution across treatment groups was the following (male–female): Treatment 1, 55.2%–44.8%, Treatment 2, 51.0%–49.0%, Treatment 3, 44.1%–55.9%, Treatment 4, 49.8%–50.2%. The chi-square test of difference in proportions across groups was significant at the $p = .02$ level as a result of the sex distributions in treatment groups 1 and 3 not being well balanced.
19. We also asked two baseline political activity questions at the very beginning of the survey, prior to respondents reading the treatment prompts. Sixty-five percent of respondents got both manipulation questions correct, but the tests may have been more difficult for some treatments than others. We also asked respondents whether they were thinking of a specific state or politician when responding to the survey in case respondents in some treatment groups were more likely to be doing this than those in others (e.g., since a female governor is uncommon, respondents in those treatments may be more likely to have a particular woman in mind). This was a question we asked at the very end of the survey. Fifty-five percent of respondents said they were thinking of a specific state. Sixty-one percent said they were thinking of a specific person. We ran restricted-sample analyses on only respondents who got both manipulations correct and on only those who were not thinking of a specific state or person and the results were similar, if not stronger, than the full-sample results that we present as our main analyses.
20. We do include additional models in the appendix. We conducted bivariate means tests and multivariate regression models using ordered logit models that include the treatments being compared, sex, and an interaction between the two. Those models also control for relevant demographics (age, social class, race, geographic region), the two measures of baseline political activity (political interest and whether or not the respondent voted in the previous election), whether the respondents got both manipulation checks correct, and whether or not the respondent was thinking of a specific state or politician when responding to the survey. The results of these models are similar to the results of the cross-tabulation of survey respondents.

21. Note that both men and women respondents were largely supportive of the governor on all three measures of approval, feeling represented, and governor responsiveness to issues. In all three cases, the vast majority of respondents were in the top two categories of approval, feeling well represented, and agreeing that the governor would be responsive to issues of concern to the respondent. Thus, to the extent that differences occur across treatments, it is in these two categories. This is not surprising, given that the treatments were written to encourage more positive than negative responses. Our overall concern is not the degree of support but any differences in that support so this is not a problem for our analyses.
22. Notably, however, 66% of Brazilians have Internet access at home (<http://www.internetlivestats.com/internet-users/brazil/>), as of 2016.
23. Note that we inverted all of the scales for the responses in our analyses so that higher values indicated higher approval, support, agreement, etc. Survey questions are translated from Portuguese here.

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Appendices

Appendix 1. Survey questionnaire²³

English Version:

Demographic and Baseline Political Activity Questions:

1. Do you consider yourself white, black, brown, indigenous or yellow? 1 = white, 2 = brown, 3 = indigenous, 4 = black, 5 = yellow, 7 = other
2. How interested are you in politics? 1 = Very interested, 2 = somewhat interested, 3 = not very interested, 4 = not interested at all
3. Did you vote in the last election? 1 = yes, 2 = no

Post-treatment Manipulation Checks:

1. Is the newly elected governor a man or a woman? (1 = man, 2 = woman, 9 = no answer)
2. Has the state already had a female governor? (1 = first man or woman, 2 = not first man or woman, 9 = no answer)

Post-treatment Survey Questions:

1. How strongly would you approve or disapprove of this governor? 1 = strongly approve, 2 = approve, 3 = disapprove, 4 = strongly disapprove (9 = no answer)
2. How well or poorly represented would you feel with this governor in office? 1 = very well represented, 2 = well represented, 3 = poorly represented, 4 = very poorly represented
3. How strongly would you agree or disagree that this governor will focus on the political issues that people like you think are important. 1 = Strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree (9 = no answer)
4. How interested would you be in politics with this governor in office? 1 = very interested, 2 = somewhat interested, 3 = not very interested, 4 = not at all interested (9 = no answer)
5. With this governor in office, how frequently would you discuss politics with other people? 1 = frequently, 2 = several times per week, 3 = several times per month, 4 = rarely, 5 = never (9 = no answer)
6. How often would you follow politics in the news, either on television, the radio, the daily papers, or the internet with this governor in office? 1 = everyday, 2 = several times per week, 3 = once or twice a week, 4 = rarely, 5 = never (9 = no answer)

7. How likely would you be to go to a local political meeting where this governor was in attendance? 1 = very likely, 2 = likely, 3 = not likely, 4 = not at all likely (9 = no answer)
8. How likely would you be to work on a campaign to help this governor get reelected? 1 = very likely, 2 = likely, 3 = not likely, 4 = not at all likely (9 = no answer)
9. With this governor in office, how strongly would you agree with the statement: On the whole, men make better political leaders than women do. 1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree (9 = no answer)

Post-survey Follow-up Questions:

1. Were you thinking of a specific state in Brazil or a specific politician when you responded to these questions? 1 = yes, 2 = no (9 = no answer)
2. If yes, which state? (states listed in a drop-down list)
3. If yes, which politician? (blank space provided for them to enter a politician's name)

Portuguese Version:

Demographic and Baseline Political Activity Questions:

1. Você se considera uma pessoa branca, preta, parda, indígena ou amarela? 1 = Branca, 2 = Parda, 3 = Indígena, 4 = Preta, 5 = Amarela, 7 = Outra
2. O quanto você se interessa pela política? 1 = Muito, 2 = Algo, 3 = Pouco, 4 = Nada
3. Você votou nas últimas eleições? 1 = Sim, 2 = Não

Post-treatment Manipulation Checks:

1. O/a novo(a) governador(a) recém-eleito(a) é um homem ou uma mulher? (1 = homem, 2 = mulher, 9 = sem resposta)
2. O estado já teve uma mulher governadora? (1 = não or woman, 2 = sim, 9 = no answer)

Post-treatment Survey Questions:

1. O quanto você aprovaria ou desaprovava este/a governador(a)? 1 = aprovaria fortemente, 2 = aprovaria, 3 = desaprovava, 4 = desaprovava fortemente (9 = sem resposta)
2. O quanto bem ou mal representado/a você se sentiria com este/a governador(a)? 1 = muito bem representado/a, 2 = bem representado/a, 3 = mal representado/a, 4 = muito mal representado/a (9 = sem resposta)
3. O quanto concorda ou discorda que esse/a governador(a) focará em questões políticas que pessoas como você acham que são importantes? 1 = concorda fortemente, 2 = concorda, 3 = discorda, 4 = discorda fortemente (9 = sem resposta)
4. Com este/a governador(a) no cargo, o quanto você se interessaria pela política? 1 = muito, 2 = algo, 3 = pouco, 4 = nada (9 = sem resposta)
5. Com este/a governador(a) no cargo, com qual frequência você falaria de política com outras pessoas? 1 = todos os dias, 2 = várias vezes por semana, 3 = uma ou duas vezes por semana, 4 = raramente, 5 = nunca (9 = sem resposta)
6. Com qual frequência você seguiria o tema política nas notícias, seja na televisão, rádio, jornal, ou pela Internet, com este/a governador(a) no cargo? 1 = todos os dias, 2 = várias vezes por semana, 3 = uma ou duas vezes por semana, 4 = raramente, 5 = nunca (9 = sem resposta)
7. O quão provável você iria a uma reunião política local com este/a governador(a) estando presente? 1 = muito provável, 2 = provável, 3 = pouco provável, 4 = nada de provável (9 = sem resposta)

8. O quão provável você trabalharia em uma campanha para ajudar este/a governador(a) a se reeleger? 1 = muito provável, 2 = provável, 3 = pouco provável, 4 = nada de provável (9 = sem resposta)
9. Com este/a governador(a) no cargo, o quanto você concordaria ou discordaria que com a seguinte declaração? “Em geral, os homens são melhores líderes políticos que as mulheres.” 1 = concorda fortemente, 2 = concorda, 3 = discorda, 4 = discorda fortemente (9 = sem resposta)

Post-survey Follow-up Questions:

1. Você pensou em um estado específico no Brasil ou em um político específico quando você respondeu às perguntas anteriores? 1 = sim, 2 = não (9 = sem resposta)
2. Se sim, qual estado? (states listed in a drop-down list)
3. Se sim, qual político? (blank space provided for them to enter a politician’s name)

Appendix 2. Additional analyses of treatment effects

Treatment comparison	Hypothesis	Approval	Feel rep.	Issues	Leaders	Interest	Discuss	News	Meeting	Campaign
Bivariate comparison of means <i>t</i> -tests (one-tailed)										
Men	T1–T4	Presence		0.014	0.03					0.04
	T2–T3	Presence	0.002	0.004	0.056	0.022	0.04			
	T1–T3					0.022	0.044			
	T2–T4	Novelty								0.035
	T1–T2	Interaction	0.005	0.003	0.049					
Women	T3–T4	Interaction		0.016	0.037					
	T1–T4	Presence	0.003	0.001	0.015		0.017	0.02	0.04	
	T2–T3	Presence		0.001	0.013					
	T1–T3									
	T2–T4	Novelty								
Multivariate results	T1–T2	Interaction		0.003	0.004		0.027			
	T3–T4	Interaction	0.001	0.001	0.057	0.022				0.05
Men	T1–T4	Presence		0.024						
	T2–T3	Presence	0.001	0.001	0.016					
	T1–T3					0.022				
	T2–T4	Novelty	0.004							
	T1–T2	Interaction	0.002	0.001	0.044					
Women	T3–T4	Interaction		0.048						
	T1–T4	Presence	0.022	0.001	0.042		0.01			
	T2–T3	Presence	0.017	0.001	0.019					
	T1–T3									
	T2–T4	Novelty								
Multivariate results	T1–T2	Interaction		0.002	0.004					
	T3–T4	Interaction	0.007	0.001						

Notes: The table presents *p*-values for each model. For the bivariate means test, the *p*-value is associated with the *t*-test. For the multivariate results, the *p*-values are associated with the effect of the treatment on women or men as calculated from the interaction terms in the multivariate models (for men, bx_1 ; for women, $bx_1 + bx_1x_2$, where x_1 is the treatment and x_1x_2 is the treatment interacted with sex of the respondent).