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**Age, Misinformation, and Support for Women's Representation**

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**Ignorance is Bliss?  
Age, Misinformation, and Support for Women’s Representation<sup>1</sup>**

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**Abstract**

Most people overestimate how many women have been elected in Congress and state legislatures, but this misinformation reduces with age. Multivariate analysis of our original survey data confirms that young people are prone to overestimating how many seats are held by women, and this pattern is especially sharper among male respondents. In addition, a memory of being represented by a woman in the past tends to inflate overestimates further. Erroneous thinking among the young may produce an “ignorance is bliss” effect by reducing the apparent need to elect more women to office and raising levels of trust in government. In contrast, more realistic beliefs among older people makes the dominance of men in public office more apparent and actionable.

Keywords: female politicians, elections, voting behavior, public opinion

JEL classification: J16, D72, D91

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Representative democracy works best when constituents are able to formulate, express, and act on preferences that reflect their values and interests. This system breaks down if the public has incomplete or incorrect information about public affairs. In the worst case, misinformation could lead a person to support a position that is contrary to their interests. For these reasons, political information has been called “the currency of politics” (Delli Carpini and Keeter 1996). Research has shown substantial differences across subsections of the electorate in what they know and believe about the structures of government, public policy, political events, and specific politicians. We take the inquiry in a new direction by exploring what Americans believe about the prevalence of women in public office and what factors influence those beliefs. Inspired by other studies suggesting young people surprisingly show the most bias against female candidates, we focus on age as a key determinant of factual beliefs about the representation of women. We find that biased beliefs are more common among the young, leading to several surprising consequences that deserve additional research.

### **What We Know about Misinformation in the Public**

When asked directly in survey questions, the American public expresses relatively firm opinions about the current state of descriptive representation. Respondents appear to have clear preferences about whether demographic groups in the electorate are appropriately reflected in government. Because young Americans tend to show more egalitarian, feminist, and liberal views than their older counterparts (e.g. Pampel 2011; Peterson, Smith, and Hibbing 2020), views about descriptive representation ought to vary with age. According to a recent Pew survey, 59% of Americans believe there are “too few” women serving in high political offices, especially

among young respondents.<sup>1</sup> What are these views based on? Presumably each respondent has a belief about how many women are in public office and whether that level of representation is satisfactory. But what if these beliefs about the current levels of representation are systematically incorrect? Views about representation are likely to be affected by misinformation, also known as misperception or the holding of incorrect beliefs (e.g., Nyhan and Reifler 2010).<sup>2</sup>

While we admit that some factual information such as knowing who is the current Chief Justice of the Supreme Court is not needed for most political judgements (Lupia 2006), other factual beliefs are more relevant, if not necessary, to form and act on opinions that reflect one's preferences. When voters do not even know which party controls Congress, it is difficult for them to hold government accountable because they cannot correctly identify which party to blame and which to reward (Bennett and Bennett 1993). On policy matters, surveys show that the public believes that the federal government spends much more of its budget on education, Social Security and Medicare, and foreign aid than it actually does (Delli Carpini and Keeter 1996). As a result, when surveys show that a majority of the public wishes to increase federal spending on education or foreign aid, it is coming from a place of misinformation. The public's preferences would presumably be different if they knew more.

In their study of public opinion toward Congress, Hibbing and Theiss-Morse (1995) find that the public underestimates the prevalence of "bad" aspects of the House of Representatives.

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<sup>1</sup> <https://www.pewsocialtrends.org/2018/09/20/women-and-leadership-2018/>

<sup>2</sup> Kuklinski et al. (2000) add to this definition that misinformation must also be accompanied by confidence. Interestingly, they find that confidence is actually higher among those who hold inaccurate beliefs. See also Graham (2020) on the connection between accuracy and certainty.

The public views Congress unfavorably despite believing that average term lengths are shorter than they really are, congressional salaries are lower than they really are, and the number of staffers is smaller than it really is. This leads to the surprising conclusion that correcting misinformation might actually cause the public to lower its evaluations of Congress further. It is consistent with analysis by Baker et al. (1996) showing that Americans who are more knowledgeable about Congress are actually less supportive of it. When it comes to beliefs about women in office specifically, Stauffer (2019) finds that people who estimate higher percentages of women in Congress are more satisfied with the legislative process and view the legislative branch as more competent.

Misinformation may be in part due to general innumeracy in the population. In particular, there is evidence that people systematically overestimate small proportions because of inherent psychological processes that draw them away from extreme values. In addition to political biases, individuals who are uncertain tend to adjust small percentages upward to more moderate values closer to 50% (Landy, Guay, and Marghetis 2018). For example, people significantly overestimate the proportion of the population that is foreign-born (Citrin and Sides 2008), gay or lesbian (Haider-Markel and Joslyn 2018).

Public belief about the demographic makeup of the population also have roots in personal experience. Nadeau, Niemi, and Levine (1993) found that overestimating the sizes of the Black, Hispanic, and Jewish populations in the U.S. was most prevalent among the young, the less educated, and those living in areas with larger minority populations. Later research showed that both blacks and whites were more prone to overestimate the share of the population that is black when they had more personal contact with blacks (Sigelman and Niemi 2001). Moreover, estimates of national percentages appear to be colored more by subjective beliefs about the size

of the local minority population than by objective measures of local percentages (Wong 2007). Estimates of the gay and lesbian population have also been found to be excessive and affected by personal exposure to members of those groups (Martinez, Wald, and Craig 2008). “Extrapolating outward” in this way from personal experience has become a common finding in the literature (Alba, Rumbaut, and Marotz 2005).

Conclusions are somewhat different among studies of public knowledge of statistics about the economy rather than the population. Respondents sometimes do well in estimating common numbers such as the unemployment rate and price of gasoline. In these economic applications, respondents’ beliefs are colored by whether they share the party affiliation of the president (Ansolabehere, Meredith, and Snowberg 2013; Lawrence and Sides 2014). These biases are apparently a result of intentional “expressive responding” in which respondents strategically support a politician of the same party or strategically denigrate a politician of the opposing party (Schaffner and Luks 2018). Partisan biases thus reflect more than divergent but sincere beliefs; the gaps in responses by Democratic and Republican respondents can be reduced if they are provided with incentives to be correct rather (Bullock et al. 2015; Prior, Sood, and Khanna 2015).

### **Thinking about Descriptive Representation of Women**

When examining public beliefs concerning the descriptive representation of women, a significant disconnect appears to exist among the young. *Direct* questioning indicates that young people are more egalitarian and more supportive of electing a larger number of women. However, *indirect* methods of measuring attitudes and behavior sometimes do not show greater support for female politicians among the young. In some cases, they actually show the opposite, with older people displaying more favorability toward female politicians. Consider two recent studies of this type.

A list experiment fielded by Burden, Ono, and Yamada (2017) to examine hidden bias against women running for president produced a surprising result that the oldest cohort displays the lowest levels of animus. In a follow-up study that used a conjoint experiment to explore how voters respond to male and female candidates, Ono and Burden (2019) estimated the largest anti-female bias among young voters, with bias decreasing steadily into older age cohorts. We suggest that this apparent mismatch between expressed preferences and those that are revealed surreptitiously may be the result of differing amounts of political knowledge between the young and the old.

There are reasons to believe that young people might be more prone to misperceptions. Most obvious is that young people generally have less experience in the political world, consume less news, and have lower levels of education. However, even after controlling for these factors young people have less correct beliefs because of their exposure to different kinds of news and entertainment media, different patterns of interpersonal communication, projection of more liberal and egalitarian values, and different direct exposure to female office holders.

To examine whether the young are less correct in their knowledge about women's representation, it is imperative to measure what people actually believe. The seminal studies of this type are by Sanbonmatsu (2003), Dolan (2011), and Stauffer (2019), all of whom have analyzed surveys asking what percentage of Congress is female. Between 20% and 50% of respondents offered estimates that were close enough to the true value to be considered "correct," but the most common tendency was to overestimate. These beliefs have important consequences: those who underestimate women's prevalence tend to want more women in Congress whereas those who overestimate see less need to elect more women.

These foundational studies guide our analysis, yet none of them were focused squarely on identifying the determinants of public beliefs about women in office. Illuminating these factors will reveal the degree to which they are rooted in individual level characteristics and contextual variables that are not easily manipulated, or more contingent factors that are in theory alterable.

Inspired by some research showing older be less biased against female candidates than are younger people, we examine several theoretical expectations. First, following prior studies, we expect the public to overestimate the prevalence of women in public office. In addition to the general tendency toward inflation, we expect to observe wide variation in beliefs. Second, political context will affect public beliefs. Given the tendency for extrapolating outward from personal experience, beliefs are likely to reflect in part actual levels of female representation and beliefs about whether respondents have been personally represented by female officials. Third, we expect respondents' beliefs about women in office to vary by individual characteristics. Prior research has shown estimates are more accurate among respondents who are white, have higher levels of education, and – of special interest here – are older.

### **Data**

To test these theoretical expectations, we commissioned an original national survey of the American electorate. Data were collected online by the polling firm YouGov in February 2019 using the company's standard methodology of sampling respondents from its large panel and propensity scores to match recent U.S. Census distributions of gender, age, race, education, and region. Potential respondents are recruited through a variety of means to opt in to join to the YouGov panel. The firm completed interviews with 3,241 respondents and then reduced it via matching to a final sample of 3,000. As a result of this methodology, a traditional response rate cannot be computed. As we note below, item nonresponse is almost nonexistent. All of our



analyses are weighted by a post-stratification weight generated by YouGov to reflect a four-way distribution of age, race, gender, and education as well as 2016 vote choice.

The dataset includes a standard set of demographic and attitudinal variables including self-reported age, gender, race, educational attainment, family income, party identification, ideology, interest in political news, vote choice in the 2016 election, and several measures of religious beliefs and practices.

To elicit stated beliefs about women in public office, we asked respondents to estimate what share of seats in Congress and their home state legislatures were held by women. The question about Congress mimics the one asked in previous studies. The similarly constructed state question is implemented for what may be the first time. Although knowledge of state politics follows similar patterns to knowledge of national politics, a state focus is helpful because of the greater variation in actual prevalence of women in office and because the gender gap in knowledge is muted at the state level compared to national politics (Lyons, Jaeger, and Wolak 2012). The exact question wordings used in our survey are as follows:

*About what percentage of seats in the U.S. Congress is currently held by women? Please answer with your best guess.*

*About what percentage of seats in the state legislature in your state is currently held by women? Please answer with your best guess.*

Responses to these questions were provided using a “slider” that ranged from 0% to 100%. Using a slider rather than a text box to enter numeric values was intentional: it reminds respondents that the question is asking about percentages not raw numbers of seats, ensures that answers fall within the range of what is logically possible, avoids typos and other ambiguous responses that result from manual entry, and maximizes item response rates to minimize

differential guessing.<sup>3</sup> The political institution of interest was underlined to emphasize that the estimate should be specific to the chamber.<sup>4</sup> The order of these two questions was also randomized to mitigate the effects of one answer contaminating the other. Responses to these questions are key parts of the dependent variables in our analysis.

Because we expect respondents' perceptions to be influenced by their personal experiences, we subsequently asked respondents whether they remembered having been represented by a woman either in Congress or in their state legislatures. Our survey asked about the institutions separately and encouraged respondents to admit if they did not know, a presumably common experience. The order of Congress and state legislature questions was also randomized to mitigate the effects of one answer contaminating the other. The exact question wordings and options presented to our respondents are as follows:

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<sup>3</sup> Men are more likely to guess about political knowledge questions when they are uncertain of the answer. As a result, a best practice is to encourage guessing to mitigate the artifactual gender gap in political knowledge identified by Mondak and Anderson (2004). Because the question did not offer a specific "don't know" option, few respondents skipped the question without hazarding a guess. Out of 3,000 respondents surveyed, only five skipped the Congress question and only three skipped the state legislature question.

<sup>4</sup> It is possible that respondents had in mind the House, the Senate, or both chambers together when answering these questions. Fortunately, at the time of our survey these distinctions should not have mattered much. The percentage female was 23.4% in the House, 25.0% in the Senate, and 23.7% in the full Congress.

*Do you happen to remember if at some point you have been represented by a member of Congress who is a woman?*

- *Yes, I believe I have been represented by a female member of Congress.*
- *No, I do not believe that I have been represented by a female member of Congress.*
- *I am not sure if I have been represented by a female member of Congress.*

*Do you happen to remember if at some point you have been represented by a member of your state's legislature who is a woman?*

- *Yes, I believe I have been represented by a female member of the state legislature.*
- *No, I do not believe that I have been represented by a female member of the state legislature.*
- *I am not sure if I have been represented by a female member of the state legislature.*

We do not believe that these questions are likely to reflect objective reality closely.

Although an experience of a female office holder might be easy for some respondents to recall, studies have shown that respondents do not know much about their current elected officials (Delli Carpini and Keeter 1996). People are probably less likely to recall perfectly characteristics of past representatives, even basic nameless information such as gender. Even without knowing the origin of these beliefs, we suspect that they anchor estimates about how many women in elected office more generally. Respondents who believe they were represented by women at some point are likely to extrapolate out and consider that the experience is more common. We also augmented the data by coding the percentage of seats held by women in the legislature where each respondent resides as a measure of objective exposure to women in that office. In subsequent analyses we also consider whether experiences with female office holders at one

level of government might influence beliefs about the prevalence of women in office at another levels of government.

### **Public Beliefs about the Prevalence of Women in Office**

We start by examining the raw data shown in Figure 1, which displays histograms of responses to the question about what share of seats in Congress or a respondent's state legislature are held by women. The wide variation and asymmetry in beliefs are apparent in the figure. Estimates of the percent of Congress that is female occupy the full range from 0 to 100 with mean of 38% and median of 35%.<sup>5</sup> The true value is 24%, so respondents on average overestimate by 14 percentage points, an exaggeration by more than half. Indeed, overestimating is far more common than underestimating, as more than 80% of respondents overstate the true value. Moreover, about half of respondents estimated a value at least ten percentage point higher than the truth; one in five respondents believe that women hold a majority of seats. The average American thus believes that women are much closer to achieving parity in representation than they actually are. In contrast to some earlier research that recoded responses into a small number of categories, we do not view the public as being approximately correct in most cases.

[INSERT FIGURE 1 ABOUT HERE]

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<sup>5</sup> Estimates at the low end of the scale near 0% and especially near the high end of the scale near 100% may be surprising, but such extreme estimates are common in studies cited above that ask respondents to estimate percentages such as the share of women in office or the sizes of various demographic groups in the population. Estimates at both ends of the scale appear even when limiting the analysis to respondents with high levels of political interest or educational attainment.

Public beliefs about women in state legislatures tend to be closer to correct than for Congress. But the greater accuracy might be serendipitous merely because women happen to make up a larger share of state legislators than they do members of the U.S. House (29% versus 24%). This is also not because respondents have a good sense of how well women are represented in their states. There is an extremely weak correlation of .11 between the actual share of seats held by women in a state legislature and the respondent's estimate of the percentage. The correlation does not rise as high as .20 even if the analysis is limited to college graduates or respondents who express the highest level of political interest.

Because respondents estimate slightly lower percentages in state legislatures, it is possible that people are drawing on different information in thinking about women in the two institutions. However, this does not appear to be the norm. The correlation between the congressional and state legislative beliefs is .73, indicating that respondents are not strongly differentiating between the two bodies. This suggests that individual-level characteristics rather than objective information about women in office are likely to be more important determinants of what people believe about the prevalence of women in office. In our analysis below, we identify variables that contribute to erroneous public estimates. In particular, our goal here is not to catalog all of the potential factors that underlie public beliefs but to show how those beliefs vary with age in ways that may distort how values are connected to political expression.

### **Modeling Public Beliefs**

Having observed high levels of misinformation and little public consensus about the degree of women's representation in legislative office, we now turn to multivariate analysis to explore factors that influence public beliefs. Following Ansolabehere, Meredith, and Snowberg (2013), we distinguish between two measures of correctness: *bias*, which is the raw difference between

the respondent's estimate and truth, and *accuracy*, which is the absolute value of the difference.

Here we report multivariate regression models of *bias* to identify the variables underlying public misperceptions. Parallel models of accuracy are reported in the appendix and produce nearly identical results. As shown in Figure 1, the average bias in beliefs is 14.4 points for Congress and 5.5 points for state legislatures, and the average accuracy in beliefs is 16.7 points and 14.7 points, respectively.

The models include an array of variables drawn from existing research on political knowledge generally as well as specific studies of public estimates of numeric quantities and facts of particular relevance to women. Question wordings and summary statistics are provided in the appendix. We start with the demographic variables of gender, race, ethnicity, college education, and age that have been shown to affect political knowledge (Delli Carpini and Keeter 1996).<sup>6</sup>

Next, we include measures of party identification and ideology, operationalized in different ways. Our preliminary exploration of bivariate relationships showed no evidence of expressive responding or asymmetry between Democrats and Republicans, but instead greater accuracy among both kinds of partisans compared to independents. Party ID is thus “folded” into a unipolar four-point scale so that it measures the strength of partisanship, running from pure independents to strong partisans. In contrast, ideology is entered in its original form as a five-point scale ranging from “very liberal” to “very conservative.” We also include a variable indicating whether religion is “very important” in the respondent's life. We expect these

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<sup>6</sup> When measuring gender, the survey only permitted respondents to identify as either male or female.

variables to represent the respondent's values about the desired role of women in society, as research has shown that sexism is correlated with both overall conservatism and more devout religious views (e.g, Valentino, Wayne, and Oceno 2018). The model also includes a control for political awareness, measured as whether the respondent is interested in political news "most of the time."

Finally, we include two variables capturing experiences with women in office. For the state legislature model, we include the actual percentage of seats held by women in the legislature of the respondent's state. To the degree that beliefs reflect reality, this variable should be a significant determinant. For both models, we include the two questions described above asking whether the respondent believes to have been represented by a woman in that legislative body "at some point."<sup>7</sup> Whether these memories are correct or not is interesting but somewhat beside the point for our study. They represent a local understanding or personal experience from which respondents might generalize outward.

To our knowledge, the questions asking whether the respondents believe they were represented by women have never been asked in large-scale surveys. For both Congress and state legislatures, nearly 40% of people believe they were represented by female legislators at some point. Approximately one-quarter believe they were not represented by women and the remaining one-third were not sure. Although the aggregate distributions of the two questions are similar, respondents appear to differentiate their beliefs about the two levels of government. Fewer than half of them give consistent "yes" or "no" responses and only one quarter respond "not sure" to both items. Belief that one has been represented by a woman at some point

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<sup>7</sup> "Not sure" is the excluded reference category.

increases with age, a reflection of a greater variety of representational experiences among people who have lived longer.

Our multivariate regression models seek to explain beliefs about the prevalence of women in office, with a focus on the effects of age. Because two dependent variables are strongly correlated, we suspect that some unmeasured factors might affect both of them. To account for this, we estimate seemingly unrelated regression (SUR) models in which the error terms in the two equations may be correlated, as revealed by an estimated rho parameter. Because the models include slightly different sets of regressors, the SUR estimates should be more efficient than would be estimates from two separate ordinary least squares regressions.

### **Regression Results**

Table 1 reports the results of our baseline models designed to explain public beliefs about the prevalence of women in Congress and state legislatures. Because the coefficients are from a basic linear regression, it is possible to use the descriptive statistics provided in the appendix to immediately determine the substantive influence of each variable. We highlight several findings from the analysis.

[INSERT TABLE 1 ABOUT HERE]

First, and of greatest interest here, there is a tendency for the young to overestimate how many women are in office, especially in state legislatures. This result is notable in part because it appears despite controlling for educational attainment and interest in politics, both of which are known to result in older people being more knowledgeable. Although young people in contemporary America generally report more egalitarian attitudes about sex roles and express stronger support for increasing the number of women in office, their enthusiasm for these views appears to be tempered by misinformation. The average American overestimates how many



women are in office by a substantial amount, and young people's beliefs are even more biased.

We will return to discuss the magnitude and impact of the age effect below.

Second, college education and a high level of interest in politics produce more accurate (i.e., lower) estimates, but the effects are of modest magnitude ranging from one to four percentage points. Reformers hoping to improve public knowledge often point to efforts designed to enhance formal education or public interest, yet these appear to have minimal effect when it comes to knowing how successful women have been in winning public office. At least in this domain, misinformation appears to be heavily rooted in other individual characteristics.

Third, knowledge varies by several well-established demographic characteristics but also along other lines of cleavage that have not previously been detected. For example, consistent with other studies such as Delli Carpini and Keeter (1996), black and Hispanic respondents have less accurate knowledge than do whites, overestimating the percentage of women in office by several percentage points. Although it is not the focus of our study, these racial and ethnic gaps in apparent knowledge deserve more scrutiny to assess the degree to which they stem from cultural biases (Abrajano 2015), are filtered through personal experiences (Cramer and Toff 2017), or are unique to particular domains of politics that are more relevant to whites (Cohen and Luttig forthcoming).<sup>8</sup> It is possible that a model accounting for more contextual variables would be able to account for some of the racial disparities that we observe. Contrary to many other domains, a respondent's gender has a small or even insignificant effect. This is consistent with

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<sup>8</sup> The effects of age and other variables remain similar even if the models are run after excluding non-white respondents.

Dolan's (2011) analysis showing that women are just as knowledgeable as men in areas where knowledge is most "gender-relevant."

Perhaps most surprising are the effect of ideological and religious values. People who identify as politically conservative or who say that religion is an important part of their lives show greater bias in beliefs.<sup>9</sup> This is unlikely to be a case of expressive responding as it is normally conceptualized, as religious conservatives are generally less enthusiastic than others about electing more women to office. Those with more traditional views about women would have reported lower percentages if they wish that politics were more dominated by men.<sup>10</sup> It is possible that people with conservative orientations are misinformed to a greater degree than others because of the kind of communications they receive from other people and the media that lead them to believe there are more women in office. Alternatively, these individuals may be intentionally reporting higher estimates to convey that liberal concerns about the need to elect more women are inflated. This is a somewhat different form of expressive responding than the standard account of partisan cheerleading would expect.

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<sup>9</sup> This pattern also appears if we substitute other measures of religiosity such as frequency of church attendance or identification as a born-again Christian.

<sup>10</sup> Our survey does not include any direct measures of gender bias or sexism attitudes. However, we asked exactly the same questions about the estimation of women legislators in a survey we conducted in Japan, in which we included a series of questions measuring sexism attitudes directly. We found the same pattern of decreasing misinformation with age, even after controlling for their sexism attitudes as well as partisanship.

Fourth, there is some evidence that people extrapolate outward from their own experiences. Compared to those who are not sure, people who believe they have been represented by female legislators at some point report higher estimates for both Congress and state legislatures. Because the vast majority of respondents are overestimating women's prevalence in these offices, outward extrapolation ironically means that awareness of women representatives actually leads to greater bias. In addition, there is at least a loose responsiveness of a person's beliefs about women in their state legislature with the actual representation of women there. The model indicates that for every 10-point increase in actual seats held, bias in beliefs is actually reduced by almost seven percentage points.<sup>11</sup> The appendix shows that experiences with women office holders at one level of government also appear to bleed over to beliefs about other levels of government. For example, a reported memory of a female state legislator actually exacerbates bias in beliefs about women in Congress.

Fifth, bias increases as partisan attachments become stronger. Going from the lowest category of a pure independent to a strong partisan raises estimates by about three percentage points. We suspect that this bias has something to do with consumption of political information from media and peers, a point we discuss at more length in the conclusion. For all the criticism that independents take for being uninformed and unengaged, our results show that it is partisans who get it wrong more often. And their error is not random but instead tends toward overestimation. This is the case even after controlling for age, education, and interest, all factors

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<sup>11</sup> The range of this variable is from 13.8% to 52.4% and it has a standard deviation of 7.2 percentage points.

that are associated with stronger partisanship. This pattern of the “ends against the middle” is certainly not a case of expressive responding.

We now return to the discussion of age and beliefs about the election of women. To demonstrate the effects of age with other factors held constant, Figure 2 displays the predicted bias in beliefs about women in Congress and their state legislatures. Gray lines indicate the 95 percent confidence intervals around the predictions. The dotted horizontal lines show the state of no bias (i.e., no difference from the true values that respondents are asked to estimate).<sup>12</sup> Across the full range of ages observed in our survey (from 18 to 89), the total effect of aging is to reduce bias by 8.5 points for Congress and 13.5 points for state legislature. For Congress, age reduces bias by half. For state legislatures, the decline is even larger and is large enough that the oldest respondents have unbiased beliefs on average.<sup>13</sup>

[INSERT FIGURE 2 ABOUT HERE]

Our baseline model reveals that correctness of beliefs did not differ materially between men and women. This null finding might be surprising for two reasons. On the one hand, women

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<sup>12</sup> For state legislatures, the true value is the mean percentage of women across all state legislatures. Setting aside extreme values – those below the fifth percentile and above the 95th percentile – weakens but does not eliminate the effects of age.

<sup>13</sup> The model’s linear specification seems to be a reasonable portrayal of the relationship between age and respondent’s beliefs. Figure A1 shows some evidence that a weak quadratic fit might also be appropriate, but the general pattern of decreasing bias with age still holds. Figure A2 in the appendix demonstrates that the age variable is well distributed so that the estimates are not vulnerable to areas with little data.

might be thought to have more natural interest in representation of their own gender and might attend to this kind of information more intently. On the other hand, many studies show that women generally have lower levels of factual knowledge about politics, a pattern that could lead men to be more accurate on average. However, our finding of minimal overall differences in the beliefs of men and women might mask important differences in how men and women *come to* those estimates. That is, although the means might be similar, the factors that produce those means might differ, but in a way that essentially “cancels out.”

We explore this possibility by estimating our baseline model separately for male and female respondents (necessarily removing the independent variable indicating gender from the models). The regression table is shown in Table A2 in supplemental appendix. The results illuminate ways in which men and women are both similar and different in how they generate beliefs. Focusing on the key variable of age, Figure 3 shows how age influences beliefs about women in office differently for male and female respondents. We find that the age effect is stronger among men than among women. As they age, the bias in women’s estimates about Congress declines by four percentage points while their beliefs about state legislatures improve by 12 points. The equivalent figures for men are 12 points and 16 points, respectively.

[INSERT FIGURE 3 ABOUT HERE]

In addition to the steeper age gradient among men, men also become significantly more accurate in their beliefs as a result of higher levels of political interest and educational attainment. This is consistent with other research showing that, in terms of political knowledge, women get less “return” from education than do men (Dow 2009). In our analysis women get almost no return from political interest or education to improve their knowledge about the representation of women. Instead, they appear to rely more on the strength of party identification

and ideological position, both of which have only minimal effects on men's knowledge. It seems that men and women have equivalent levels of misinformation as young adults, but that men's knowledge improves more sharply as both groups become older.

## **Conclusion**

The American public has only a rough sense of how prevalent women are in key political institutions and significantly overestimate the success of women in winning office. Moreover, personal memories of having been represented by a woman make beliefs less rather than more accurate. Misinformation about descriptive representation is disconcerting because research shows that people who overestimate how successful women have been in getting elected express less support for electing more women to office (Dolan and Sanbonmatsu 2009; Sanbonmatsu 2003). As the share of women in office presumably approaches 50% in the coming years, an interesting question for future research is whether public beliefs operate differently near this tipping point. If public preferences act like a "thermostat" (e.g., Wlezien 1995) and respond to reality only by approximately adjusting upward and downward rather than around precise truths, then there might be a reversal in opinions, especially among the young, as women approach parity in public office.

The specific impacts of partisan strength and ideology on beliefs about women's descriptive representation suggests that differences in political knowledge are not merely "expressive responding" but are due in part to selective exposure to and retention of political information. It is possible that the general tendency to overestimate is due to the media giving disproportionate attention to female politicians, or that coverage of women is easier to recall. In their study examining the volume of media coverage of members of Congress, Wagner and Gruszczyński (2018) found that women in the House received only slightly less media coverage

than their male colleagues (a difference of 1.2 articles where the mean coverage is 27 articles, or just 4%). In contrast, women in the Senate were much more likely to be covered, receiving 25 more articles on an average of 151, an over-representation of 17%. If women politicians are also more memorable because they are novel or unexpected given the stereotypes of politicians as being mostly male, then even proportionate coverage of male and female politicians could nonetheless contribute to memories that overrepresent women.

The public and especially this key group—the young—would presumably become more alarmed and energized if their misinformation was corrected, and in this sense alone “ignorance is bliss.” The rose-colored views of young people are not due to lower political interest, less formal education, weaker partisanship, or even less personal experience having been represented by women, although these are contributors to public beliefs. While a cross-sectional survey such as ours cannot distinguish whether the age gradient is a life-cycle, generational, or cohort effect, and thus how the pattern might resolve itself in the distant future, in contemporary politics it is clear that the young are key drivers of misinformation of a particular type and that bias is not likely to disappear anytime soon.

Greater misinformation among the young exacerbates the greater difficulty young people have in connecting their values to their political preferences. Older people are more likely to “vote correctly” than are young people (Lau, Anderson, and Redlawsk 2008), but the disparity is merely a reflection of lesser effort among younger people. In a study designed to motivate respondents to put in more effort to report accurate factual estimates, Prior and Lupia (2008) offered monetary compensation and longer time frames for responses. Although these incentives increased accuracy overall, young respondents were the only cohort that did not improve in performance. This suggests that age differences in knowledge are actually muted in standard

surveys such as ours. Facilitating more effort would presumably improve correctness among older respondents more, thus exacerbating age differences in beliefs about women in office. In addition, evidence suggests that disparities in political knowledge among the young and old have actually become more severe over the past half century (Wattenberg 2016), suggesting that the problem is not going to resolve itself.

Finally, our results raise the question of whether misperceptions about women in office have spillover effects in influencing other political activities in the electorate. Several studies suggest that having more women or minorities in Congress encourages women and minority constituents to vote, trust government, and run for office (Burns, Verba, and Schlozman 2001; Gay 2002; Banducci, Donovan, and Karp 2004; Campbell and Wolbrecht 2006; cf. Broockman 2014). These analyses are based on *objective* measures of seats held by various groups, but it seems plausible that perceptions could matter more than reality. It will take additional research to investigate whether *beliefs* about women in office – either generally or in one’s jurisdiction – matter more or less than the reality. If beliefs are more important than reality, the widespread overestimation of women in public office may have a surprising upside in motivating more women to vote, trust government, and run for office than would if they had accurate information.

### **Supplementary Data**

Supplementary data are freely available at *Public Opinion Quarterly* online.

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## **Figures**

Figure 1. Public Beliefs about Prevalence of Women in Elected Office

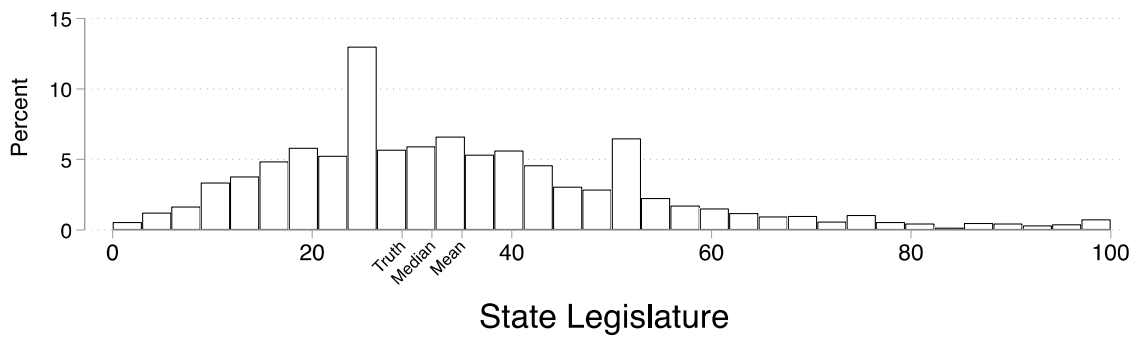
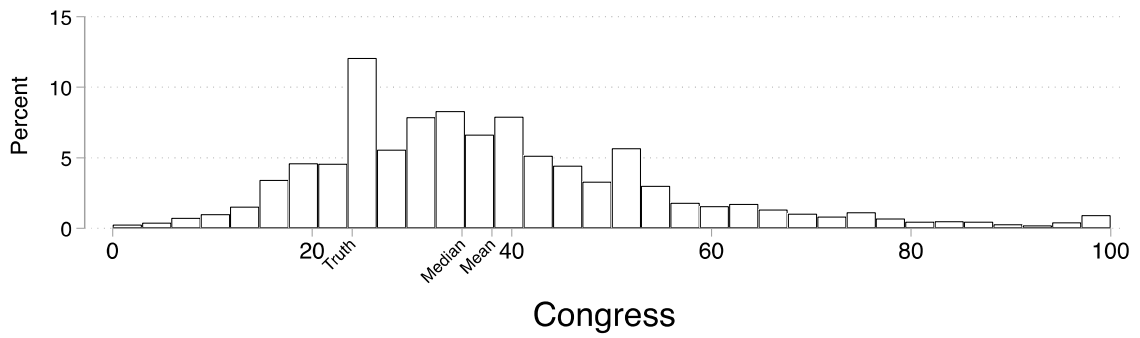
Figure 2. Effect of Age on Bias in Beliefs about Prevalence of Women in Elective Office

Figure 3. Effect of Age on Bias in Beliefs about Women in Elective Office by Gender

**Table 1. Explaining Bias in Beliefs about Prevalence of Women in Elected Office**

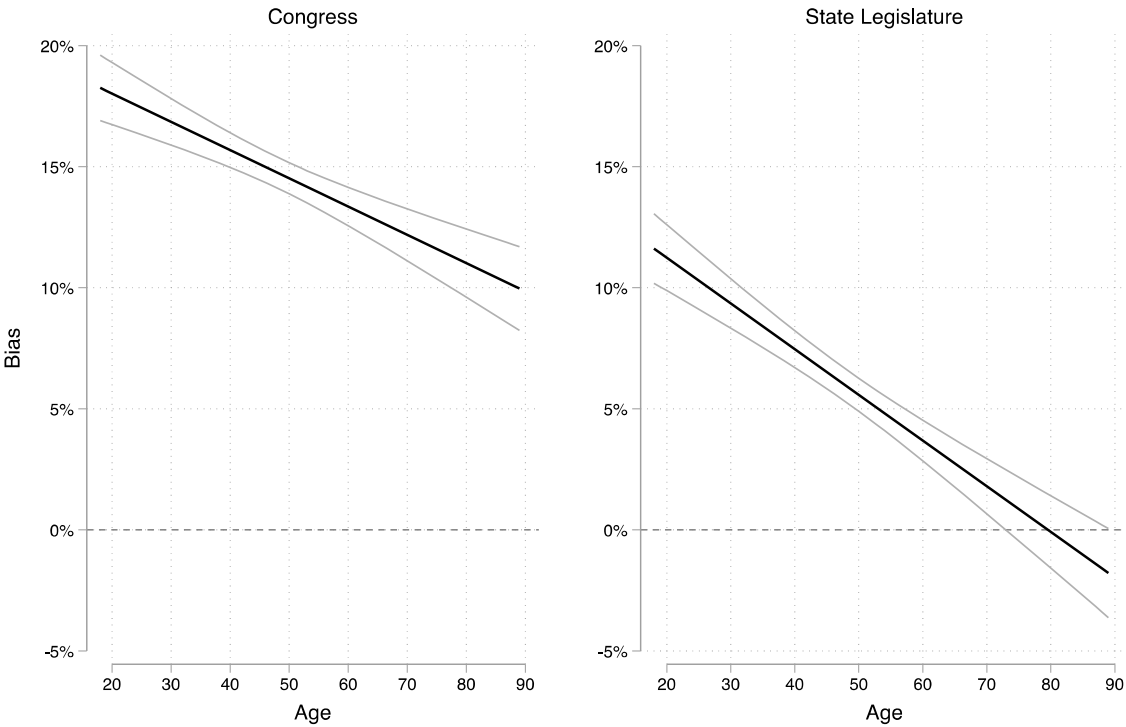
	Congress		State Legislature	
	Coefficient (SE)	<i>p</i> value	Coefficient (SE)	<i>p</i> value
Age	-.12 (.02)	<.01	-.19 (.02)	<.01
Female	1.96 (.68)	<.01	-0.86 (.72)	.23
Black	5.53 (1.09)	<.01	3.15 (1.16)	<.01
Hispanic	6.13 (1.03)	<.01	6.91 (1.09)	<.01
College Education	-3.65 (.70)	<.01	-1.59 (.75)	.03
Income Under \$40,000	1.05 (1.13)	.35	1.01 (1.20)	.40
Income \$40,000-\$80,000	.46 (1.17)	.69	.53 (1.25)	.67
Income Over \$80,000	.12 (1.21)	.92	.84 (1.29)	.52
Strength of Party Identification	1.19 (.30)	<.01	1.07 (.32)	<.01
Ideology	.86 (.28)	<.01	.84 (.30)	<.01
Religion Very Important	3.37 (.72)	<.01	5.05 (.76)	<.01
Political Interest	-.87 (.73)	.24	-2.47 (.77)	<.01
Believes Was Represented by Female MC	1.89 (.65)	<.01	--	
Believes Was Not Represented Female MC	.31 (.70)	.66	--	
Believes Was Represented by Female State Legislator	--		3.13 (.66)	<.01
Believes Was Not Represented by Female State Legislator	--		.23 (.72)	.75
Percent Women in State Legislature	--		-.68 (.04)	<.01
Constant	34.28 (1.94)	<.01	25.67 (2.32)	<.01
Rho			.71	
N			2,691	

**Figure 1. Beliefs about Women in Congress and State Legislatures**

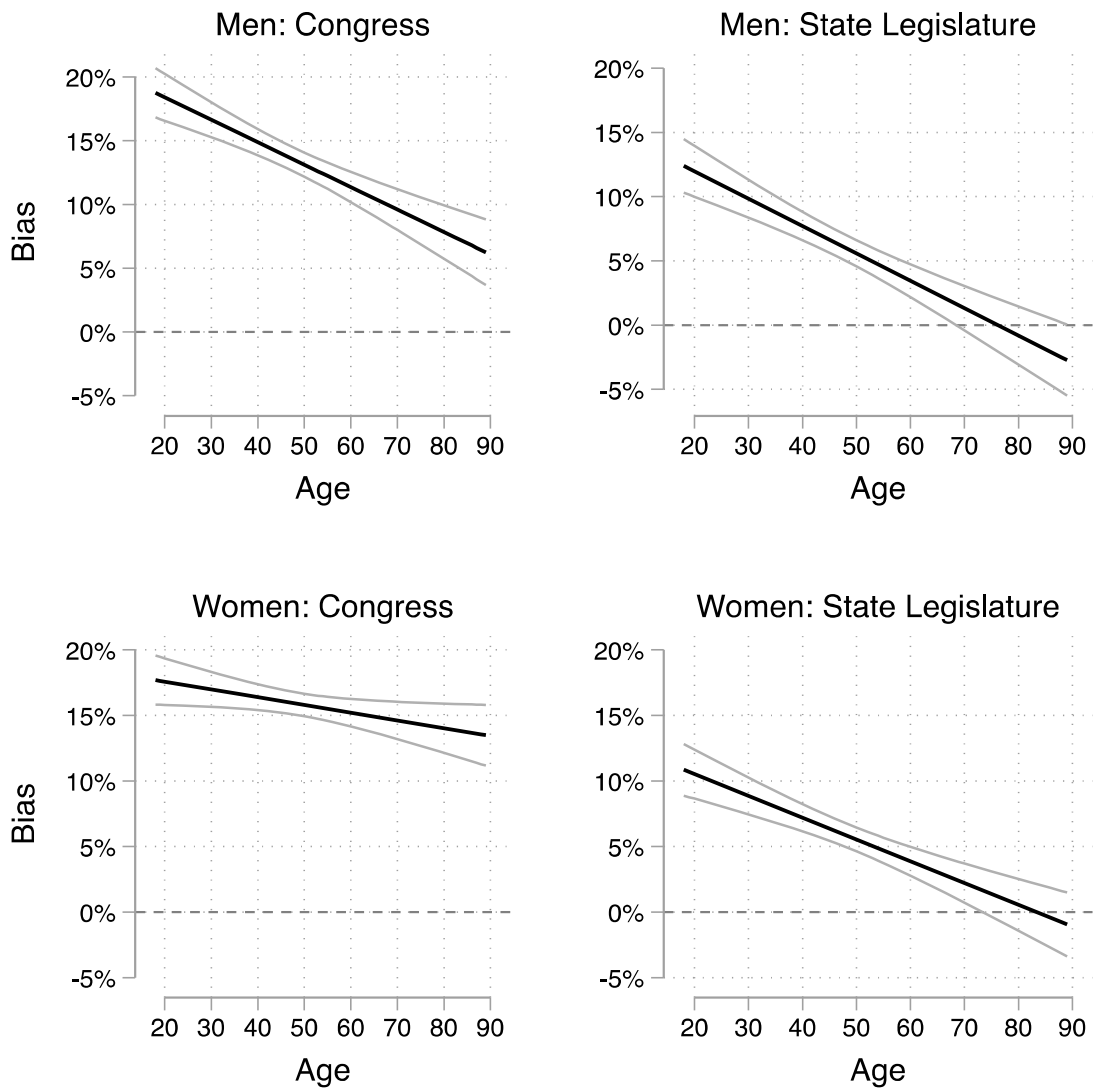




**Figure 2. Effect of Age on Bias in Beliefs about Women in Elective Office**



**Figure 3. Effect of Age on Bias in Beliefs about Women in Elective Office by Gender**



# **Ignorance is Bliss? Age, Misinformation, and Support for Women's Representation**

## **Appendix**

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Figure A3. Question Wordings

**Table A1. Explanatory Variable Summary Statistics and Correlations with Bias**

	Mean	Range	Correlation with Bias in Beliefs about Congress	Correlation with Bias in Beliefs about State Legislature
Bias in Beliefs about Congress	15.2	-24 to 76	--	--
Bias in Beliefs about State Leg	6.7	-48.4 to 86.2	--	--
Accuracy in Beliefs about Congress	17.4	0 to 76	.94	.69
Accuracy in Beliefs about State Leg	15.4	0 to 86.2	.59	.69
Age	47.1	18 to 89	-.12	-.19
Female	.52	0 to 1	.06	-.01
Black	.12	0 to 1	.12	.08
Hispanic	.15	0 to 1	.12	.14
College Education	.39	0 to 1	-.13	-.08
Income Under \$40,000	.39	0 to 1	.08	.06
Income \$40,000-\$80,000	.26	0 to 1	-.02	-.02
Income Over \$80,000	.22	0 to 1	-.06	-.03
Strength of Party ID	2.85	1 to 4	.07	.04
Ideology	4.04	1 to 5	.05	.06
Religion Very Important	.39	0 to 1	.13	.16
Political Interest	.45	0 to 1	-.09	-.12
Believes Was Represented by Female MC	.39	0 to 1	.09	.08
Believes Was Not Represented by Female MC	.28	0 to 1	-.11	-.10
Believes Was Represented by Female State Legislator	.37	0 to 1	.07	.08
Believes Was Not Represented by Female State Legislator	.26	0 to 1	-.09	-.07
Actual Percent Women in State Legislature	29.3	13.8 to 52.4	-.002	-.25

*Note:* Ns for individual variables range between 2,762 and 3,000.

**Table A2. Explaining Bias in Beliefs about Women in Elected Office by Gender**

	Female		Male	
	Congress	State Legislature	Congress	State Legislature
Age	-.06*	-.17**	-.18**	-.21**
	(.03)	(.03)	(.03)	(.03)
Black	7.91**	5.74**	3.12	.54
	(1.46)	(1.54)	(1.61)	(1.73)
Hispanic	7.73**	7.01**	4.72**	7.04**
	(1.39)	(1.46)	(1.51)	(1.62)
College Education	-2.43*	-.10	-4.48**	-3.08**
	(.95)	(1.00)	(1.04)	(1.12)
Income Under \$40,000	-.87	-1.63	2.92	3.52
	(1.49)	(1.57)	(1.71)	(1.84)
Income \$40,000-\$80,000	-2.16	-2.06	3.47*	3.39
	(1.54)	(1.63)	(1.76)	(1.90)
Income Over \$80,000	-1.47	-1.16	1.99	3.01
	(1.66)	(1.75)	(1.77)	(1.90)
Strength of Party Identification	1.16**	1.24**	1.09*	.79
	(.42)	(.44)	(.43)	(.46)
Ideology	1.60**	1.65**	.15	.05
	(.39)	(.41)	(.41)	(.44)
Religion Very Important	1.21	3.03**	5.85**	7.27**
	(0.95)	(1.00)	(1.07)	(1.15)
Political Interest	.74	-1.60	-2.73*	-3.42**
	(.99)	(1.03)	(1.07)	(1.15)
Believes Has Been Represented by Female MC	2.04*	--	1.61	--
	(.86)		(1.00)	
Believes Has Not Been Represented Female MC	-.20	--	.45	--
	(.94)		(1.05)	
Believes Has Been Represented by Female State Legislator	--	3.04**	--	3.22**
		(.88)		(1.00)
Believes Has Not Been Represented by Female State Legislator	--	-.77	--	.94
		(.97)		(1.08)
Percent Women in State Legislature	--	-.69**	--	-.67**
		(.05)		(.05)
Constant	7.72**	22.26**	15.37**	28.67**
	(2.58)	(3.11)	(2.83)	(3.40)
Rho		.70		.72
N		1,426		1,265

\*  $p < 0.05$ ; \*\*  $p < 0.01$

**Table A3. Incremental Models of Bias in Beliefs about Women in Elected Office**

	Age Alone		+ Demographics		+ Opinions	
	Congress	State Leg	Congress	State Leg	Congress	State Leg
Age	-.12** (.02)	-.20** (.02)	-.09** (.02)	-.17* (.02)	-.11** (.02)	-.20** (.02)
Female			1.94** (.65)	-.29 (.72)	1.89** (.68)	-1.19 (.74)
Black			5.49** (1.03)	4.60** (1.14)	5.55** (1.10)	3.43** (1.20)
Hispanic			5.07** (.93)	7.70** (1.03)	6.19** (1.03)	7.44** (1.13)
College Education			-3.80** (.69)	-2.55** (.77)	-3.51** (.71)	-1.70* (.77)
Income Under \$40,000			.33 (1.02)	1.48 (1.13)	1.08 (1.14)	1.69 (1.25)
Income \$40,000-\$80,000			.20 (1.09)	1.34 (1.21)	.55 (1.18)	1.15 (1.29)
Income Over \$80,000			-.01 (1.14)	1.38 (1.22)	.29 (1.22)	1.39 (1.34)
Strength of Party Identification					1.22** (.30)	1.11** (.33)
Ideology					.82** (.28)	.86** (.31)
Religion Very Important					3.35** (.72)	6.04** (.79)
Political Interest					-.53 (.72)	-2.05* (.79)
Constant	20.64** (.93)	16.04** (1.03)	18.28** (1.32)	12.67** (1.46)	10.81** (1.93)	5.97** (2.11)
Rho		.73		.72		.70
N		2,984		2,984		2,692

\*  $p < 0.05$ ; \*\*  $p < 0.01$

**Table A4. Explaining Accuracy in Beliefs about Women in Elected Office**

	Congress	State Legislature
Age	-.11** (.02)	-.12** (.02)
Female	1.36* (.60)	-.67 (.53)
Black	5.49** (.96)	4.80** (.86)
Hispanic	5.27** (.91)	4.50** (.81)
College Education	-3.19** (.62)	-1.78** (.56)
Income Under \$40,000	1.12 (1.00)	2.43** (.90)
Income \$40,000-\$80,000	.17 (1.04)	.89 (.93)
Income Over \$80,000	-.13 (1.07)	1.92* (.96)
Strength of Party Identification	1.25** (.27)	.84** (.24)
Ideology	.69** (.25)	.16 (.22)
Religion Very Important	3.15** (.63)	4.12** (.57)
Political Interest	-.90 (.65)	-1.34* (.58)
Believes Has Been Represented by Female MC	2.33** (.63)	--
Believes Has Not Been Represented Female MC	.36 (.68)	--
Believes Has Been Represented by Female State Legislator	--	1.97** (.54)
Believes Has Not Been Represented by Female State Legislator	--	1.25 (.59)
Percent Women in State Legislature	--	-.06 (.03)
Constant	12.89** (1.72)	15.62** (1.78)
Rho		.61
N		2,691

\*  $p < 0.05$ ; \*\*  $p < 0.01$

**Table A5. Models of Bias Including All Variables in Both Equations**

	Congress	State Legislature
Age	-.12** (.02)	-.19** (.02)
Female	2.03** (.67)	-.79 (.72)
Black	5.71** (1.09)	3.14** (1.15)
Hispanic	6.10** (1.03)	6.93** (1.09)
College Education	-3.95** (.71)	-1.89* (.75)
Income Under \$40,000	.96 (1.13)	.93 (1.20)
Income \$40,000-\$80,000	.25 (1.17)	.34 (1.24)
Income Over \$80,000	-.10 (1.21)	.55 (1.29)
Strength of Party Identification	1.12** (.30)	.99** (.32)
Ideology	.95** (.28)	.92** (.30)
Religion Very Important	3.33** (.72)	5.04** (.76)
Political Interest	-1.35 (.74)	-2.98** (1.11)
Believes Was Represented by Female MC	2.73** (1.05)	2.91** (1.10)
Believes Was Not Represented Female MC	-.98 (1.14)	-1.64 (1.21)
Believes Was Represented by Female State Legislator	2.70** (1.00)	4.14** (1.06)
Believes Was Not Represented by Female State Legislator	.14 (1.10)	.62 (1.16)
Percent Women in State Legislature	.04 (.05)	-.67** (.05)
Constant	8.48** (2.42)	24.43** (2.57)
Rho		.72
N		2,691

\*  $p < 0.05$ ; \*\*  $p < 0.01$



**Table A6. Models with Multiple Educational Attainment Indicators**

	Congress	State Legislature
Age	-.13** (.02)	-.20** (.02)
Female	1.97** (.68)	-0.74 (.72)
Black	5.41** (1.09)	3.04** (1.16)
Hispanic	6.17** (1.03)	6.77** (1.10)
High School Graduate	2.39 (1.54)	.23 (1.64)
Some College	-.10 (1.59)	-2.10 (1.69)
Associates Degree	-2.26 (1.74)	-1.83 (1.85)
Bachelors Degree	-2.15 (1.64)	-2.81 (1.75)
Post-Graduate	-3.25 (1.77)	-2.05 (1.89)
Income Under \$40,000	.99 (1.13)	.94 (1.21)
Income \$40,000-\$80,000	.49 (1.17)	.56 (1.25)
Income Over \$80,000	.23 (1.22)	.93 (1.29)
Strength of Party Identification	1.19** (.30)	1.07** (.32)
Ideology	.83** (.28)	.81** (.30)
Religion Very Important	3.29** (.72)	4.93** (.76)
Political Interest	-.74 (.74)	-2.27** (.78)
Believes Was Represented by Female MC	1.96** (.65)	--
Believes Was Not Represented Female MC	.42 (.70)	--
Believes Was Represented by Female State Legislator	--	3.19** (.66)
Believes Was Not Represented by Female State Legislator	--	.27 (.72)
Percent Women in State Legislature	--	-.68**

Constant	9.49**	(.04)
	(2.34)	26.71**
Rho		(2.70)
N		.71
		2,691

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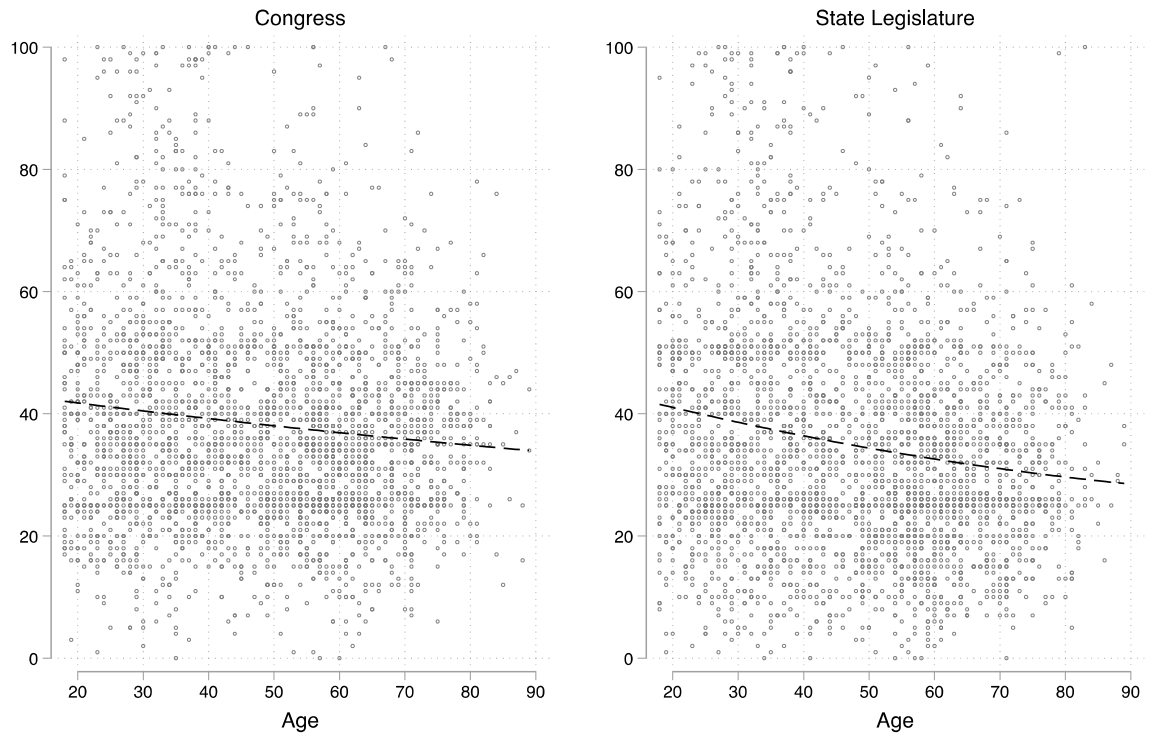
\*  $p < 0.05$ ; \*\*  $p < 0.01$

**Table A7. Models of Bias with Party Identification Dummy Variables**

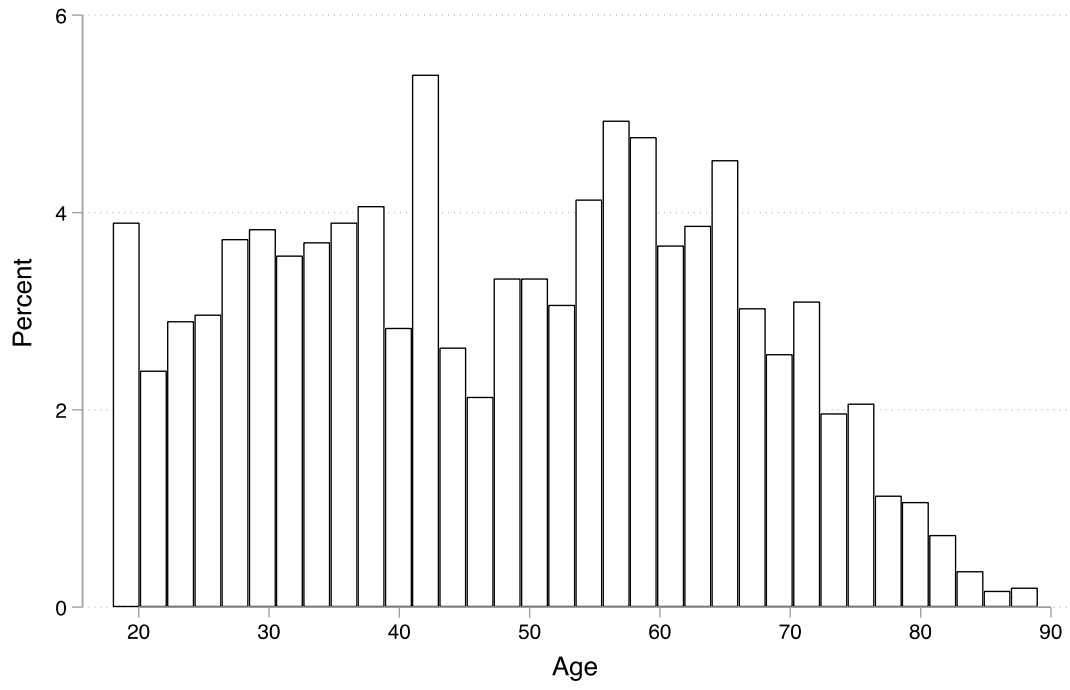
	Congress	State Legislature
Age	-.12** (.02)	-.19** (.02)
Female	1.94** (.67)	-.72 (.72)
Black	6.11** (1.11)	3.89** (1.19)
Hispanic	5.77** (1.00)	6.85** (1.07)
College Education	-3.69** (.70)	-1.52* (.75)
Income Under \$40,000	.74 (1.09)	.93 (1.17)
Income \$40,000-\$80,000	.27 (1.14)	.52 (1.22)
Income Over \$80,000	-.21 (1.18)	.61 (1.26)
Democrat	2.42** (.83)	1.50 (.88)
Republican	2.09* (.89)	1.90* (.94)
Ideology	.89** (.33)	.75* (.35)
Religion Very Important	3.65** (.71)	5.17** (.76)
Political Interest	-.71 (.73)	-2.54** (.77)
Believes Was Represented by Female MC	1.91** (.64)	--
Believes Was Not Represented Female MC	.36 (.69)	--
Believes Was Represented by Female State Legislator	--	3.20** (.66)
Believes Was Not Represented by Female State Legislator	--	.45 (.71)
Percent Women in State Legislature	--	-.69** (.04)
Constant	12.40** (1.85)	28.27** (2.24)
Rho		.72
N		2,744

\*  $p < 0.05$ ; \*\*  $p < 0.01$

**Figure A1. Scatterplots of Age and Beliefs with Quadratic Fit Lines**



**Figure A2. Distribution of Age**



## Figure A3. Question Wordings



About what percentage of seats in the U.S. Congress is currently held by women? Please answer with your best guess.



About what percentage of seats in the state legislature in your state is currently held by women? Please answer with your best guess.



Do you happen to remember if at some point you have been represented by a member of Congress who is a woman?

- No, I do not believe I have been represented by a female member of Congress.
- Yes, I believe I have been represented by a female member of Congress.
- I am not sure if I have been represented by a female member of Congress.

Do you happen to remember if at some point you have been represented by a member of your state's legislature who is a woman?

- No, I do not believe I have been represented by a female member of the state legislature.
- Yes, I believe I have been represented by a female member of the state legislature.
- I am not sure if I have been represented by a female member of the state legislature.

In what year were you born?

Are you...?

- Male
- Female

What racial or ethnic group best describes you?

- White
- Black or African-American
- Hispanic or Latino
- Asian or Asian-American
- Native American
- Middle Eastern
- Mixed Race
- Other (please specify)

**What is the highest level of education you have completed?**

- Did not graduate from high school
- High school graduate
- Some college, but no degree (yet)
- 2-year college degree
- 4-year college degree
- Postgraduate degree (MA, MBA, MD, JD, PhD, etc.)

**Thinking back over the last year, what was your family's annual income?**

- Less than \$10,000
- \$10,000 - \$19,999
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 - \$69,999
- \$70,000 - \$79,999
- \$80,000 - \$99,999
- \$100,000 - \$119,999
- \$120,000 - \$149,999
- \$150,000 - \$199,999
- \$200,000 - \$249,999
- \$250,000 - \$349,999
- \$350,000 - \$499,999
- \$500,000 or more
- Prefer not to say

**In which state do you live?**

**Generally speaking, do you think of yourself as a ...?**

- Democrat
- Republican
- Independent
- Other (please specify)
- Not sure

**Do you think of yourself as closer to the Democratic or the Republican Party?**

- The Democratic Party
- The Republican Party
- Neither
- Not sure

**In general, how would you describe your own political viewpoint?**

- Very liberal
- Liberal
- Moderate
- Conservative
- Very conservative
- Not sure

**Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs ...**

- Most of the time
- Some of the time
- Only now and then
- Hardly at all
- Don't know

**Who did you vote for in the election for President?**

- Donald Trump
- Hillary Clinton
- Gary Johnson
- Jill Stein
- Evan McMullin
- Other (please specify)
- Did not vote for President

**How important is religion in your life?**

- Very important
- Somewhat important
- Not too important
- Not at all important