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Lexicographic Preferences in Candidate Choice. How Party Affiliation Dominates Gender and Race

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Abstract
Understanding which political candidates are elected for office is fundamental to democracy and political science. Whereas there is much agreement that party affiliation is one of the most important candidate characteristics to voters, evidence regarding the gender and race of the candidate is mixed. We suggest voters have lexicographic preferences, meaning they rank their preferences and focus primarily on the candidate's party affiliation. Second-order preferences such as gender and race are mostly necessary when there is a tie in first-order preferences when voters choose between two same-party candidates or have no party information. We show how conjoint experiments can be used to test for lexicographic preferences and use data from a US-representative sample and a pre-registered replication to confirm that in the United States, gender and race are second-order preferences. Lexicographic preferences provide a theoretical lens explaining some of the mixed results of gender and race in the candidate literature.

Keywords: candidates; voters; conjoint; gender; race

Introduction

During the primary elections of the Democratic presidential candidate in the United States in 2020, much public debate focused on the gender and race of the candidates, including Joe Biden's pick of Kamala Harris (Goldmacher, Nagourney, and Medina 2020; Herndon 2020). However, existing research is unclear about whether gender (and race) affects the selection of candidates or if partisan cues outweigh the influence of other attributes (Bauer 2018, 1; see also Badas and Stauffer 2019; Bauer 2017; Crowder-Meyer, Gadarian, and Trounstine 2020a; Ditonto, Hamilton, and Redlawsk 2014; Schneider and Bos 2016). At the same time, gender is the most included information of all factors in conjoint and factorial experiments studying candidate choice, but apparently, it has a negligible effect (Schwarz and Coppock 2022). Has the importance of gender and race been overestimated?

Not necessarily so. We suggest that voters have lexicographic preferences to varying extents, which means that they rank their preferences in a hierarchy in which at least one candidate attribute dominates the effect of the others. In times of political polarization in a political system such as the American one, party affiliation may be a first-order preference for voters, who first and foremost seek congruence between their own party identification and the candidate's (Druckman et al. 2021). Party affiliation has generally been found to be of prime importance for candidate choice in candidate and voting literature (for example, Popkin 1991; Rahn 1993), and with the apparent rise in affective political polarization in the United States, the importance of party affiliation seems to be emphasized even more (Druckman et al. 2021; Iyengar, Sood, and Lelkes 2012; Iyengar et al. 2019; Lawless 2015).

However, with lexicographic preferences, other candidate attributes such as gender and race become more important if there is a tie in the first-order attribute. For example, this is the case with same-party choices in top-two primaries used for congressional and state-level elections in some US states (for example, California and Washington) (Crosson 2020; Stauffer and Fisk 2022). This alternative structuring of preferences challenges the usual assumption of substitutability between alternatives in classical choice theory (Drakopoulos 1994; Dutter 1981; Rosenberger et al. 2003; Scott 2002) as well as most theories on how voters weigh the different attributes of candidates.

Lexicographic preferences may explain some of the mixed results regarding second-order attributes, such as gender and race in the literature because they have been obtained across cases with and without same-party competition and without taking lexicographic preferences into account (Matland and King 2002; McGraw 2011; Schwarz and Coppock 2022). We argue that many previous results are consistent with lexicographic preferences and propose a unified theoretical framework capable of explaining these results. Furthermore, we show how the conjoint method can be used to test for lexicographic preferences and when the influence of second-order attributes such as gender and race is likely to be revealed.[1]

We present original data analyses, including a US-representative sample (Kirkland and Coppock 2018), and we find evidence that gender and race are second-order attributes. The effect of gender increases when there is a tie in the lexicographic first-order attribute, party affiliation. Furthermore, when comparing Democratic and Republican respondents, we see that Republican voters tend to prefer white to black candidates when the candidates are from the same party. At the same time, the second-order effect of gender is primarily driven by Democratic respondents who tend to prefer female over male candidates (consistent with Stauffer and Fisk's (2022) results).

In the discussion, we assess the generalizability and alternative explanations of the results in a pre-registered replication, a placebo test, a test of the influence of strong versus weak partisans, and a test in another country with a different electoral system to the United States using Horiuchi, Smith, and Yamamoto (2020) data from Japan.

In the study, we focus primarily on political candidates' race and gender as possible second-order attributes because of limited statistical power and because effect sizes for attributes with multiple levels are not directly comparable to those for binary attributes (Ganter 2023; Leeper, Hobolt, and Tilley 2020). However, some of our results indicate that other attributes, such as age and experience, may also be relevant second-order attributes so that future research may focus more systematically on other candidate attributes.

The technique of testing for lexicographic preferences within conjoint experiments provides an easy-to-use method for the study of candidate choice. However, the technique can also be used in other areas where one attribute dominates the others. In this case, the preferences are lexicographic (Rosenberger et al. 2003; Scott 2002). We make all data and code required to run our test for lexicographic preferences and to produce the results publicly available in the open software R, in which we build on the software package cregg (Leeper 2018).

Theory and Existing Evidence

Unlike assumptions in classical choice theory, lexicographic preferences allow a ranking of preferences for candidate attributes. For example, if party affiliation is a first-order preference that voters seek satisfied first, then gender and race can be expected to be second-order preferences that voters seek satisfied only – or primarily – when party affiliation has been satisfied. In the Appendix, we present a formal definition of 'strict lexicographic preferences' in which all attributes are rank ordered, and 'dominating preferences' where one attribute dominates, while multiple secondary attributes may behave as substitutable (Scott 2002).

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[1]Our use of conjoint experiments to test for lexicographic preferences adds to the debate on the validity of using conjoint experiments to measure voter preferences (Abramson, Kocak, and Magazinnik 2022). Our test of lexicographic preferences relates to what Bansak et al. (2023) refer to as 'intense,' 'moderate,' and 'mild' preferences.

The Pre-Eminence of Party Affiliation in Vote Choice

Party affiliation is one of the most often mentioned and studied candidate attributes and a likely first-order preference. Numerous studies have characterized it as the most important factor: the 'preeminent electoral cue' (Basinger and Lavine 2005, 171).

However, for party affiliation to be a first-order lexicographic preference, it should have a larger influence than other attributes and actively dominate ('dampen') the effect of other attributes (McGraw 2011, 190; Schneider and Bos 2016). One argument is that party affiliation provides voters with an information shortcut or heuristic that can be a helpful guide when making complex political decisions. Party cues may supply voters – perhaps especially those with limited political knowledge and interest – with a way to reduce cognitive effort (Lau and Redlawsk 2001; Rahn 1993). Another argument is that, for some voters, a social identity in its own right can potentially create hostility (Westwood et al. 2018) and partisan bias through motivated reasoning that can dampen voters' assessment of other attributes (Bartels 2002; Rahn 1993).

Party affiliation is, therefore, expected to be a very influential piece of information for voters when evaluating political candidates – and it may even dominate the effect of other candidate attributes such as gender and race.

Gender and Race as Second-Order Preferences?

Gender and race may be second-order lexicographic preferences, either because voters have more 'moderate' preferences for these attributes (Bansak et al. 2023) or because voters use them as substitutes for ideology.

In empirical research, the effect of gender on vote choice is less clear than that of the party (Bauer 2015; Ditonto, Hamilton, and Redlawsk 2014; Dolan 2014). In a new meta-analysis of sixty-seven candidate choice experiments, Schwarz and Coppock (2022) find an average effect of gender of only two percentage points.

However, some evidence indicates that the effect of candidate gender on vote choice depends on party affiliation (Bauer 2017; Dolan 2014; Lawless 2015). Specifically, in circumstances where the party cue is absent or irrelevant, such as in presidential primaries, gender stereotypes may be influential (Badas and Stauffer 2019; Hayes 2011; Stauffer and Fisk 2022). Matland and King (2002) point out that much of the experimental literature on gender influence does not include information about party affiliation, which could dominate these gender effects. In some of the studies that include party affiliation, it is kept constant or made irrelevant.

For example, Matland (2003) and Sanbonmatsu and Dolan (2009) keep party affiliation constant while varying the gender of the candidate and find the effects of gender. Similarly, in a recent study of the top two primaries in the United States, Stauffer and Fisk (2022) concluded that Democrats and women are more likely to vote for female candidates when the candidates' party affiliations are the same (see also Crosson 2020). Corbett et al.'s (2022) study of women's access to political leadership is also carried out exclusively among Democratic candidates and voters in a Democratic primary. As Hayes notes about Sanbonmatsu and Dolan (2009), a political party was made irrelevant in these studies (2011, 139), and the results lend themselves to a lexicographic interpretation.

The influence of race on candidate choice is also disputed. Some studies find a sizeable effect (Crowder-Meyer et al. 2020b; Fisher et al. 2015), while some do not (Highton 2004; Juenke and Shah 2015; Kirkland and Coppock 2018).

Just as with gender, race may be affected by the absence or presence of party affiliation (Citrin, Green, and Sears 1990, 91; Crowder-Meyer et al. 2020b, 514–15; Sigelman and Sigelman 1982, 267). For example, Kam (2007) shows that attitudes towards Hispanics influence the willingness to support a Hispanic candidate, but only when there is no information about party affiliation. As with gender, party cues seem to eliminate the effects of race, but if they are absent or irrelevant, race can have an influence.

Using Conjoint Experiments to Test for Lexicographic Preferences

In conjoint experiments, respondents are asked to choose between (or rate) alternatives – in our case, political candidates. The candidates are presented in profiles containing a number of attributes of the candidates, such as party affiliation, gender, race, and age. Profiles are usually compared in pairs of two. Respondents are asked to choose which of the two candidates they would vote for.

Conjoint experiments are often used to estimate the average marginal component effect (AMCE) of each of the candidates' attributes on the choice of the candidates (Hainmueller, Hopkins, and Yamamoto 2014). Recent discussions have helped clarify what the AMCE more precisely estimates and does not estimate (Abramson, Kocak, and Magazinnik 2022; Bansak et al. 2023; Ganter 2023). Important to the study of lexicographic preferences, the AMCE of an attribute is identified by averaging the other attributes of the candidate and all the attributes of the alternative candidate in the same choice task. If party affiliation is a dominating first-order lexicographic preference, respondents will (primarily) use the party attribute to decide which candidate to vote for. However, when both candidates in the choice task have the same party affiliation, the respondents must look for other second-order attributes to reach a decision.

In candidate conjoint experiments with only two party values (for example, Republican and Democrat), respondents will choose between two candidates from the same party in 50 per cent of the tasks (on average). The AMCE is the effect of attributes such as race and gender, estimated as an average of the effect in these (50 per cent) choice tasks with a tie on party affiliation and the effect in the other (50 per cent) tasks when the party affiliation differs.

We use this feature of AMCE to test whether the effect of one attribute depends on whether there is a tie on another attribute (cf. Bansak et al. 2023, 16). Specifically, to test for lexicographically dominated second-order attributes, we propose (1) splitting the data into tasks with a tie on the hypothesized first-order attribute (in our case, party affiliation) and tasks with variation in the first-order attribute, (2) estimating the marginal component effect of the other attributes in each of these subsets, and (3) comparing the size of two sets of marginal component effects. Statistically significant differences in the marginal component effects indicate that the other preferences are second-order lexicographic preferences dominated by first-order preferences. In the Appendix, we present a formal description of the use of conjoint experiments to identify lexicographic preferences.

The effects of attributes may also depend on the characteristics of the voters. Interactions with voter characteristics can coexist with lexicographic preferences. For instance, gender and race may be second-order preferences but evaluated differently by Democratic and Republican voters. Democratic respondents may prefer female, black candidates and Republican respondents may prefer male, white candidates – but only if the two candidates are from the same party. When the effect of an attribute depends on the voters' political ideology, we define it as a political attribute. We test for political second-order attributes by comparing the effects when the attributes are congruent and not congruent with the political positions of the voters.

Testing for Lexicographic Preferences

To test for the presence of lexicographic preferences, we first carried out original analyses of data collected by Kirkland and Coppock (2018), which they kindly made publicly available. The study uses one dataset containing 1,204 respondents from a Mechanical Turk (MTurk) sample and 1,200 respondents from a US-representative sample constructed by YouGov. Both samples of respondents were presented with a conjoint experiment asking them to select between two candidates five times (choice tasks). The candidates were described by their gender, race, age, political experience, and career experience. Additionally, information about the candidate's party (independent, Republican, or Democrat) was randomly added to half of the choice tasks. Kirkland and Coppock (2018) found similar results in both samples, so we pooled them here
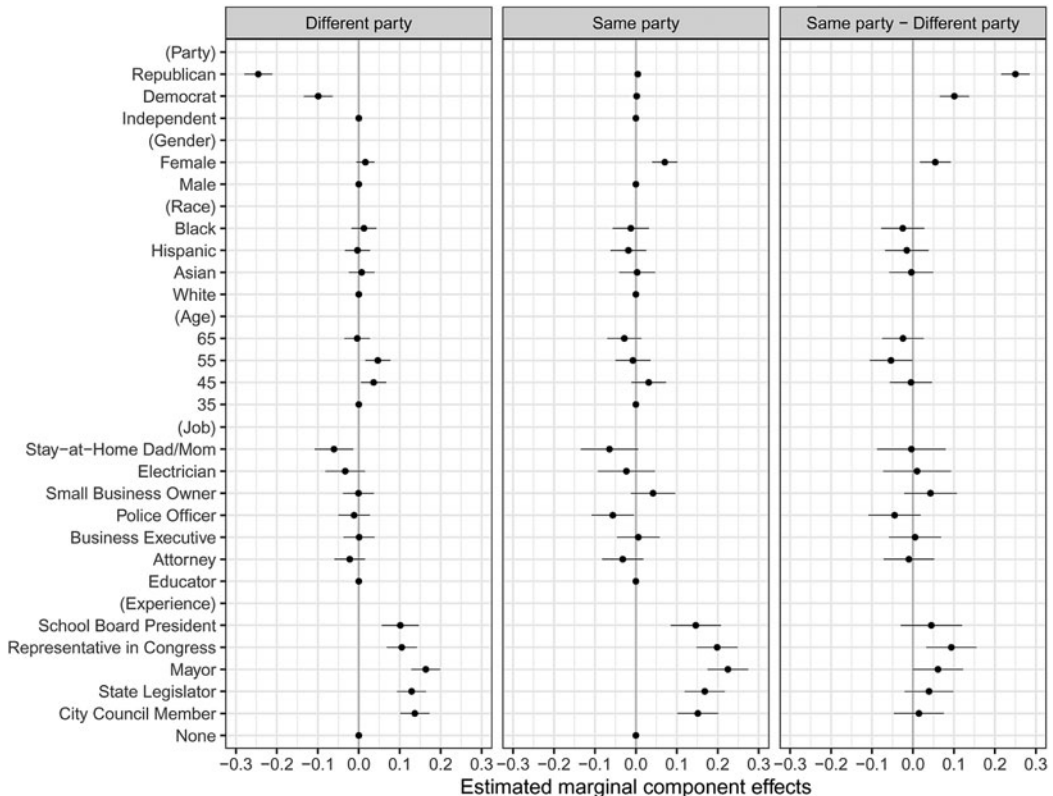
Figure 1. Marginal component effects with and without differences in party affiliations.
Note: Horizontal bars present 95 per cent confidence intervals. Kirkland and Coppock (2018), YouGov, and MTurk data were pooled.

to increase statistical power. Results for each sample are presented separately in the Online Supplementary File, Figures S1 and S2.

Figure 1 contains three panels. The first panel, 'Different party', shows the effect of the attribute values for all choice tasks when the respondents choose between candidates from two different parties. Here, the effect of the Republican party is about −0.25.[2] The second panel, 'Same party', shows the marginal effects of choice tasks with two candidates from the same party. Here, the effect of the Republican party is, as expected, zero. The third panel, 'Same party – Different party', displays the tests of whether the effect estimates in the first two panels are statistically significantly different from each other.

Thus, the first panel in Figure 1 shows the effect when the attributes can be dominated by the difference in the potential first-order attribute party. Here, we see no significant effect of gender (female). However, in the second panel, when candidates are from the same party such that second-order attributes are not dominated, the effect of females is significantly positive. The third panel shows that the two estimates are significantly different from each other, which is what we would expect if (some) respondents have lexicographic preferences.

In the analyses where all respondents are pooled, we do not find indications that race is a lexicographic preference since it has no statistically significant effects in either the dominated or non-dominated choice tasks. However, in Figure 2, we analyze the data for Republican and Democratic respondents separately. Here, the black race has a negative effect if the respondent

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[2]The effect of Republican party across all choice tasks (both with and without ties on party) is −0.15, which confirms Ganter's (2023, 103) point that AMCE shrinks as a function of the share of ties.
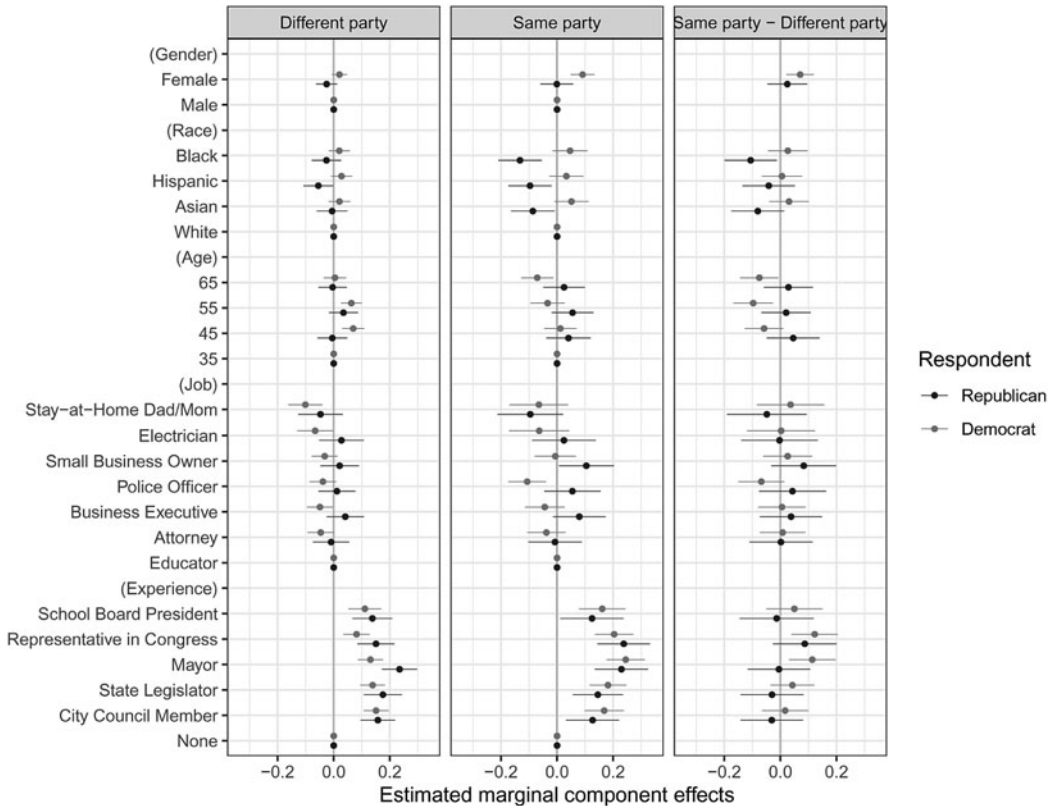
Figure 2. Marginal component effects with and without difference in party affiliations by the respondent party.
Note: The attribute 'Party' is included in the statistical model but not presented for readability concerns. Horizontal bars present 95 per cent confidence intervals.

is Republican and the candidates are from the same party (second panel). The effect is smaller and insignificant if the candidates are from different parties (first panel). The third panel indicates that the black race is a second-order lexicographic preference for Republican respondents. It has a significantly larger effect when not dominated by party affiliation.

Figure 2 also shows that the effect of lexicographic second-order preferences for female candidates, see Figure 1, is driven by the Democratic respondents, which has a negative effect on male candidates, predominantly when the candidates are from the same party. These results are consistent with the theory that gender and race are lexicographic second-order political attributes.

There is some indication that experience as a representative in Congress is also a second-order lexicographic preference since it has a higher effect when both candidates are from the same party – especially for Democratic respondents. Age seems to work the other way for Democratic respondents. They prefer middle-aged candidates (45 or 55 years) when they can choose between candidates from different parties, but this effect is significantly smaller when candidates are from the same party.

Discussion

Alternative explanations, as well as the generalizability of our findings, should be considered. Since our analysis of the Kirkland and Coppock (2018) data was obviously not pre-registered, and since our analysis involves a large number of statistical tests, there is a risk of false positives.

Therefore, we tested the results in a pre-registered conjoint experiment. The replication study is presented in the Appendix. All the results support our theory that race and gender are second-order lexicographic and political preferences among US voters (see Figures A1 and A2).

One alternative explanation is that conjoint choice tasks are hypothetical scenarios with specified information about candidates. Therefore, when choosing between two candidates from the same party, respondents may feel forced to use information about other attributes they would not use in real candidate choice scenarios. To test this alternative explanation more formally, we used our MTurk conjoint experiment to conduct three placebo tests in which we treated gender, race, and job type as the potential first-order lexicographic preference, split the data on scenarios where there is a tie on these particular attributes, and, where there is not, compare the effects of the other attributes. If respondents feel forced to use non-tied information in the conjoint experiment, it should not matter which information is tied. In the Online Supplementary File, we show that when using gender as a placebo for first-order preferences, we do not see significantly different effects of party and race in the two types of scenarios (Figure S3). Similarly, when race is used as a placebo for first-order preferences, we do not see statistically significant differences in party or gender effects in the two scenarios (Figure S4). However, there seems to be a significant effect of race (black) for Republicans in the test with job type as a first-order preference, but the effect is in the opposite direction than expected (positive) (Figure S5). Having said that, the importance of the conjoint methodology for the results (including the importance of presenting attributes on candidate ideology in the conjoint experiments) is a natural next step for research on lexicographic preferences.

It is also worthwhile considering the question of how to select or identify which attributes are first- and second-order lexicographic preferences. We use theory that points to the importance of party affiliation in previous research and focus on gender and race as second order, but some of our results indicate that age and experience may also be second-order attributes dominated by party. Future research may study the ordering of multiple candidate attributes.

Future research may also study the mechanism generating the second-order effect of gender and race. One interpretation is that gender and race are used as signals of ideology but only when not trumped by the party signal. Another interpretation is that gender and race are valued in their own right but only when not trumped by the party. In their online appendix, Kirkland and Coppock (2018, Appendix, pp. 8–11) present results suggesting that the associations between candidate gender/race and perceived ideology of the candidate are not significantly stronger in non-partisan elections – where voters might to a higher extent have used the demographics as proxies for ideology – than in the partisan elections where they can use the party as a dominating heuristic. These data suggest that the effect of second-order attributes does not occur because they are used as substitutes for ideology, but more research is needed to answer this question.

Another important question concerns heterogeneity in lexicographic preferences. In exploratory (not pre-registered) analyses, we compared the degree of lexicographic preferences between strong partisans (respondents who self-identified as 'Strong Democrat' or 'Strong Republican) to weak partisans ('Independent Democrat' or 'Independent Republican'). Figure A3 in the Appendix presents the results for strong and weak Democrats. As expected, lexicographic preferences are strongest for the strong Democrats. However, effects from the weak Democrats follow the same direction, even though not statistically significant.

For Republicans, Figure A4 shows the same effect on gender. Results are strongest and significant for strong Republicans and in the same direction but insignificant for weak Republicans. For race, we do not see any significant results. We note that we only have 138 strong and 106 weak Republicans in the sample, which places some limitations on these subgroup analyses in terms of statistical power.

Finally, there is the question of whether lexicographic preferences can be found in other countries with other political systems and cultures. A comprehensive examination of this question is beyond the scope of the current paper. However, we have analyzed data from the Horiuchi, Smith, and Yamamoto (2020) study in Japan. The results in Figure A5 of the Appendix indicate that

lexicographic preferences can also be observed in countries other than the United States, even though the nature of second-order preferences seems to vary by political culture and context.

Conclusion

Existing research finds mixed results regarding the effects of gender and race on voters' candidate choices. We propose that gender and race are second-order lexicographic preferences to party affiliation, with an increased effect on candidate choice when candidates share party affiliation. This theory was supported by an analysis of Kirkland and Coppock's (2018) data, and we confirmed the theoretical hypothesis in a separate, pre-registered study.

   We find that the preferences are not strictly lexicographic. They have some effect even when voters can choose between two candidates who differ on party affiliation. Yet, the effects of the second-order preferences, gender and race, increase significantly and substantially when candidates are from the same party. The effects of gender and race for Democratic respondents are 0.18 and 0.16, respectively. These are as large or larger than any of the effects in a standard AMCE analysis (see Kirkland and Coppock 2018). When candidates are from different parties, the effect of gender for Democrats is 0.03, which is close to the two percentage point average in Schwarz and Coppock's (2022) meta-analysis of sixty-seven studies.

   The implications of our study are that some of the mixed findings in candidate choice literature may be explained by lexicographic preferences and that conjoint experiments can help uncover them. Gender and race might have a large influence on vote choice. This could potentially be the case for other candidate attributes. Important questions for future research would be whether first-order and second-order lexicographic preferences differ across political cultures and what the psychological underpinnings of lexicographic preferences are.

   In any case, the results presented here suggest that the public debate may be justified in its attention to the gender, race, and other attributes of political candidates. The question about the importance of gender and race should be framed slightly differently – not whether they matter for candidate choice but under what circumstances they do.

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Appendix

Defining Lexicographic Preferences

Some theoretical models of voter preferences consider two types of candidate attributes: valence and political (or ideological) attributes (for example, Franchino and Zucchini 2015). Valence attributes, V_c, are valued identically by all voters, and more is always preferred to less of a given valence attribute. Examples could be the competence and integrity of the candidate. Political attributes, P_c, instead divide voters by their ideological stance, and here, the party of the candidate, c, may be the most important cue. They are defined by a utility function, U_i, for voter, i:

$$U_i = \alpha V_c + \beta(|P_c - P_i|). \tag{1}$$

Equation 1 shows that political attributes depend on the voter's own policy position, whereas valence attributes have a positive (or negative) influence on utility for all candidates. The simple model also allows for the possibility that voters may assign different salience or weight to different attributes – indicated by the parameters α and β.

We propose a third type of attributes, lexicographic attributes, L. Drakopoulos (1994) defines *strict lexicographic preferences* in the following way:

Let x' and x'' be two alternatives defined as two bundles of attributes:

$$x' = (x'_1, \ x'_2; \ \dots x'_n)$$

$$x'' = (x''_1, x''_2; \ldots x''_n).$$

x' is preferred to x'' if

$$\text{either 1) } x'_1 > x''_1$$
$$\text{or} \quad 2) \; x'_1 = x''_1; \; x'_2 > x''_2$$
$$\text{or} \quad 3) \; x'_1 = x''_1; \; x'_2 = x''_2; \; x'_3 > x''_3.$$

In other words, x_2 is only considered if there is a tie between x'_1 and x''_1, and x_3 is only considered if there is also a tie between x'_2 and $x'_2\prime$ and so forth until $x'_{n-1} = x''_{n-1}; \; x'_n > x''_n$.

'Strict lexicographic preferences' means that an individual would always place absolute priority on the first-order attribute, x_1, and would never substitute any part of it to gain anything in terms of other, lower ordered attributes (that is, x_2 and x_3). In a sense, the other attributes are dominated by this first-order attribute. As the name implies, these are very strict assumptions that would probably rarely occur in practice. It may be that not all attributes are ordered lexicographically by the respondent, but only the first dominating attribute. Scott (2002) refers to in Lancaster's definition of *dominating preference* as a situation where condition 1) is satisfied, but the other attributes (x_2 and x_3) may behave as substitutable.[3]

We define lexicographically dominated second-order attributes, L, as attributes with a salience that depends on the choice set:

$$U_i = \alpha V_c + \beta(|P_c - P_i|) + \gamma^d L_c. \tag{2}$$

The effect of second-order attributes, γ^d, is a function of the choice set. Let c' and c'' be two candidates with attribute values:

$$c' = (v', \, p', \, l')$$

$$c'' = (v'', \, p'', \, l'').$$

The effect of second-order attributes, γ^d, depends on whether the candidates, c' and c'', are from the same party ($p'; = p''$) or not. We define

$$\gamma^d = \begin{cases} \gamma^{dominated}, & \text{if } p' \neq p'' \\ \gamma^{dominated}, & \text{if } p' = p''. \end{cases} \tag{3}$$

When there is no tie between the two values on the lexicographically dominating first-order attribute, P (that is, $p' \neq p''$), the second-order attribute is dominated, and its effect, $\gamma^{dominated}$, should be smaller than the effect when there is a tie. When there is a tie on the first-order attribute, the second-order attribute is not dominated, $\gamma^{dominated}$, and may play a larger role in determining the candidate choice:

$$\gamma^{dominated} < \gamma^{dominated}.$$

In the candidate literature, this influence of party affiliation on the effect of other attributes has been referred to as the way in which party affiliation 'dampens' (McGraw 2011, 190) or 'attenuates' (Kam 2007, 348) the effects of other characteristics or traits of the candidate. We use this difference in the effect of dominated and non-dominated second-order attributes as an indication of lexicographic preferences.[4]

Lexicographically dominated attributes may also be political in the sense that if they have an effect, $\gamma^{dominated} > 0$, the effect depends on the ideal of the voter, L_i:

$$U_i = \alpha V_c + \beta(|P_c - P_i|) + \gamma^d(|L_c - L_i|). \tag{4}$$

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[3]Rosenberger et al. (2003, 64) further define *modified lexicographic preferences*, which means that values on the dominating variable only have to be above some threshold before other variables are considered. This target setting behavior is closely related to satisficing theory (Simon 1959).

[4]If voters have strict lexicographic preferences, $\gamma^{dominated}[p' \neq p''] = 0$, then voters attach no weight at all to dominated attributes when the two candidates differ on the first-order attribute, P, but some weight when there is a tie on the first-order attribute.

For example, Republicans may prefer male over female candidates, and Democrats may prefer the opposite. However, if party affiliation dominates the influence of gender, gender only has an effect when the voter's preference for party affiliation has been satisfied.

Using Conjoint Experiments to Test for Lexicographic Preferences

We suggest that conjoint experiments can be used to test for lexicographic preferences.[5]

In conjoint experiments, respondents are often asked to choose between (or rate) two alternatives. The candidates are presented in profiles containing a number of attributes. The respondents are often asked to complete several of such choice tasks, thereby increasing statistical power (Hainmueller, Hopkins, and Yamamoto 2014).

By randomly assigning the values (levels) of the attributes to the profiles (for example, woman or man for the attribute gender), the conjoint method makes it possible to estimate the average marginal component effect (AMCE) of each of the attributes on the choice of the candidates. Hainmueller, Hopkins, and Yamamoto (2014, 10) show that the AMCE represents the marginal effect of an attribute, π_l, averaged over the joint distribution of the remaining attributes:

$$\overline{\pi_l}(t_1, t_0, p(t)) = \sum_{(t,t)\in\tilde{T}} \mathbb{E}[Y_i(t_1, t, t) - Y_i(t_0, t, t)|(T_{ijk[\neg l]}, T_{i[\neg j]k}) \in \tilde{T}]$$

$$\times \, p(T_{ijk[\neg l]} = t, T_{i[\neg j]k} = t|(T_{ijk[\neg l]}, T_{i[\neg j]k}) \in \tilde{T}). \tag{5}$$

In relation to Equation 2, π_l represents α, β, or γ, that is, the effects of valence, political, or lexicographic attributes. t_1 is the treatment level and t_0 the reference level of the attribute. Y_i is the potential outcome for respondent i. $T_{ijk[\neg l]}$ is the vector of levels of the other attributes (not l) for respondent i, of the candidate profile, j, in choice task k. $T_{i[\neg j]k}$ is the levels of attributes in the other profile, not j. $\tilde{T}$ is the set of all possible values of the attributes.[6]

Important to the study of lexicographic preferences, the AMCE of attribute l is not only identified by averaging the other attributes of the candidate, j, that is, $T_{ijk[\neg l]}$, but also all the attributes of the alternative candidate, j, in the same choice task, that is, $T_{i[\neg j]k}$. If party affiliation is a dominating first-order lexicographic preference, respondents will (primarily) use the party attribute to decide which candidate to vote for. However, when both candidates in the choice task have the same party affiliation, the respondents look for other second-order attributes to reach a decision. In candidate conjoint experiments with only two party values (for example, Republican and Democrat), the respondents will choose between two candidates from the same party in 50 per cent of the tasks (on average). The AMCE is the effect of attributes such as race and gender estimated as an average of the effect in these choice tasks, with a tie on party affiliation and the effect in the other (50 per cent) tasks when the party affiliation differs. The *average* marginal component effect, AMCE, of second-order lexicographic preference, γ, is an average of the two types of tasks, weighted by the share of choice tasks in which the two candidates are from different parties, w_d:

$$\gamma^{AMCE} = w_d \gamma^{dominated} + w_{\neg d} \gamma^{dominated}, \, w_d + w_d = 1. \tag{6}$$

To test for lexicographically dominated second-order attributes, we propose (1) splitting the data into tasks with a tie on the hypothesized first-order attribute (in our case, party affiliation) and tasks with variation in the first-order attribute, (2) estimating the marginal component effect of the other attributes in each of these subsets, and (3) comparing the size of two sets of marginal component effects. Statistically significant differences in the marginal component effects will indicate that the other preferences are second-order lexicographic preferences dominated by the first-order preference.

Characteristics of the Voters

If a lexicographic second-order preference is also political, $\gamma^{dominated}$ represents an average of the conditional effect on voters for which the value of the attribute is congruent with their policy position, $\gamma^{dominated,congruent}$, and voters for which it is not

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[5]Work within the health and environmental sciences especially have considered the role of lexicographic preferences (and other discontinuous preferences) in conjoint experiments. The identification of these preferences have usually been done in two distinct ways: either with direct follow-up questions after the conjoint experiment or by identifying respondents who consistently chose profiles in which one attribute was superior (Campbell, Hutchinson, and Scarpa 2008, 403). Often, the purpose of such studies have been to identify the respondents who choose lexicographically rather than understand how lexicographic preferences for certain attributes can influence other attributes (see, for example, Scott 2002). Our proposal focuses on the general effects of lexicographic preferences measured in conjoint experiments.

[6]For more details and a definition of situations where not all combinations of attribute values are used, see Hainmueller, Hopkins, and Yamamoto (2014).

congruent, $\gamma^{dominated,congruent}$. We should, therefore, expect this relationship:

$$\gamma^{dominated,congruent} < \gamma^{dominated} < \gamma^{dominated,congruent} \tag{7}$$

In other words, we can test for political second-order preferences by comparing the effects when the attributes are congruent and not congruent with the political positions of the voters. Similarly, we can compare respondents from the same party with weak and strong partisanship to examine whether lexicographic preferences are more prevalent among strong partisans.

Pre-Registered Candidate Choice Experiment

Since our analysis of the Kirkland and Coppock (2018) data was obviously not pre-registered, and since our analysis involves a large number of statistical tests, there is a risk of false-positive tests. To test the results more formally, we pre-registered a study[7] with the following hypothesis:

H₁: When two candidates share party affiliation, Democrats prefer (a) female and (b) black candidates more than Republicans do – and more so than when candidates have different party affiliations.

We recruited 662 MTurk respondents from the United States for the study presented here.[8] Only respondents with a HIT approval rate of 98 per cent or above and a HIT approval number above 5,000 were included. They received \$1.21 when completing the survey, which lasted about 10 minutes (the survey also contained questions not used in this study).[9] The data were collected between 19 and 29 June 2020.

The survey presented respondents with five conjoint choice tasks in which they could choose between two candidates. The choice was not forced. The candidates had six attributes (party, gender, race, age, job, and experience). Table A1 lists the different attributes and values (levels) in the conjoint experiment. The order of the attributes was randomized between each rendition of the table.

Table A1. Attributes and levels in the conjoint experiment

Attribute	Values
Party	Republican, Democrat
Gender	Male, Female
Race	Black, White
Age	35, 45, 55, 65
Job	Factory worker, business owner
Political Experience	None, 1, 2, 3+

We used a smaller number of levels per attribute than Kirkland and Coppock (2018) to increase statistical power and make our study comparable to other conjoint studies. The choice and party affiliation variables in the pre-registered study were measured as follows:

Choice variable, *Y*: 'Which of these two candidates would you choose? If in doubt, please choose the one that you like the most' (single choice between candidates 1 and 2, not forced).

Party affiliation of the respondent: 'Generally speaking, do you usually think of yourself as a Republican, a Democrat, or as an independent?' ('Strong Democrat', 'Weak Democrat', 'Independent Democrat', 'Independent', 'Independent Republican', 'Weak Republican', 'Strong Republican'.)

The first three response categories were coded as Democrat and the last three as Republican. Strong Democrats (Republicans) were coded as the first (last) category. Weak Democrats (Republicans) were coded as those who identified as 'Independent Democrat[s]' ('Independent Republican[s]').

Figure A1 shows that when respondents could choose between candidates from two different parties (first panel), the effect of Republican candidates was about −0.25. This is similar to the results based on the Kirkland and Coppock (2018) data, which show that we can replicate this result and that Democratic respondents similarly dominate our MTurk sample.

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[7]An anonymized version of pre-registration can be found here: https://osf.io/8cf29/?view_only=6711342f1498497ea4c20734a2645dd0.

[8]For another study we used an additional 683 randomly selected respondents.

[9]\$1.21 is calculated as 1/6 of the federal minimum wage, corresponding to the 10 minutes.

More importantly, the figure indicates that gender and race are second-order lexicographic preferences. They tend to have larger effects when candidates are from the same party – even if the difference for gender is not statistically significant. Similarly, age and experience also seem to be lexicographic second-order preferences in our data.

However, if these attributes are also political attributes, their effect will depend on the share of Republican and Democratic respondents in the sample. Therefore, we turn to Figure A2 to examine the effects by respondent party and, thereby, test H_1. The second panel confirms the first part of the hypothesis: 'When two candidates share party affiliation, Democrats prefer (a) female and (b) black candidates rather than Republicans do'. By contrast, the first panel shows that when the parties of the two candidates differ, there are minimal effects on gender and race, if any, for Republican and Democratic respondents. Consequently, the third panel confirms the last part of H_1, 'and more so than when candidates have different party affiliations'. The difference in the effect of gender and race between Republicans and Democrats is significantly larger when they choose between two candidates from the same party rather than between candidates from different parties. In other words, these results support the theory that race and gender are second-order lexicographic *and* political preferences among US voters.

We note that the results in Figure A2 also indicate that age is a second-order lexicographic preference and that it is political in the sense that it is only the Democratic respondents who dislike older candidates if they choose between candidates from the same party. Experience seems to be a second-order valence attribute in the sense that both Republican and Democratic respondents tend to prefer more experienced candidates when they are from the same party, even if this is only statistically significant for the Democratic respondents (Figure A2).
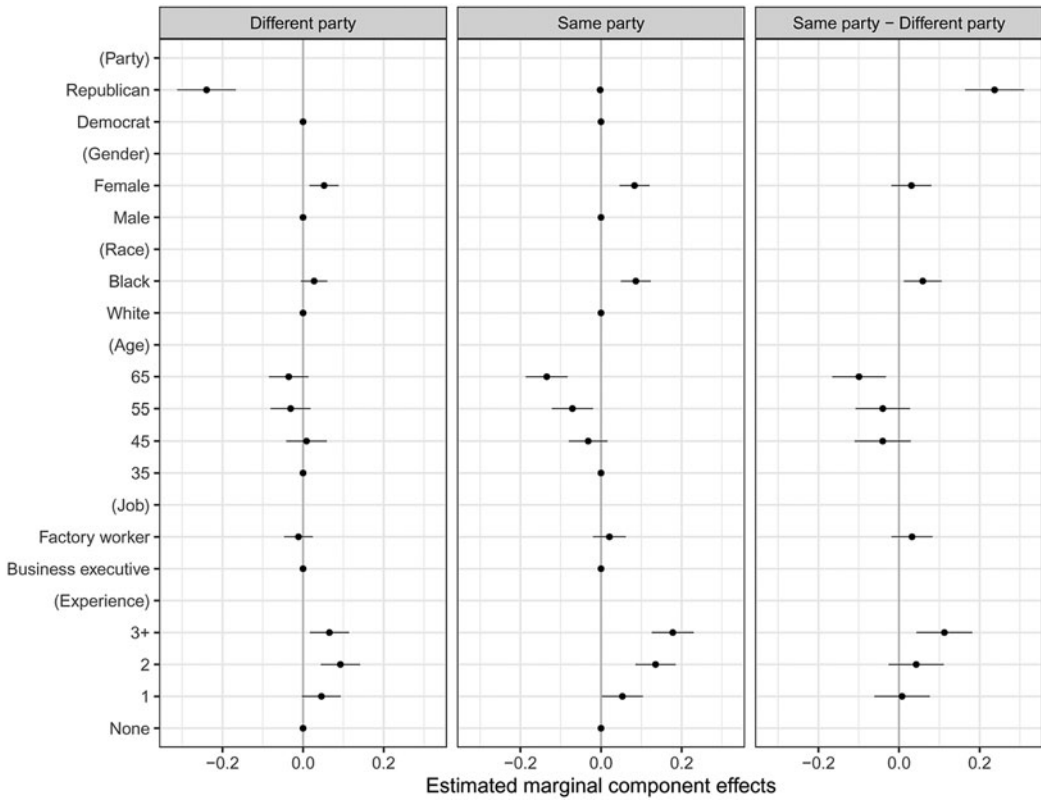
Figure A1. Marginal causal effects with and without a tie to party affiliation.
Note: Horizontal bars present 95 per cent confidence intervals.
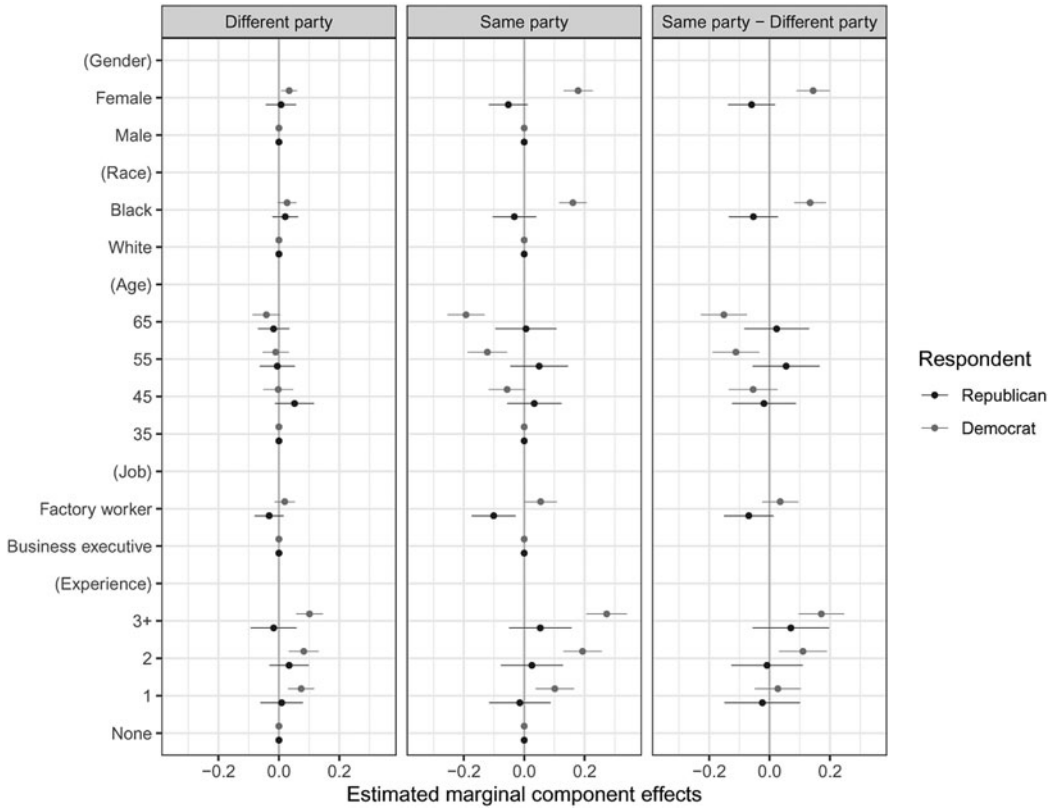
Figure A2. Marginal causal effects with and without a tie on party affiliation – by the respondent party.
Note: For readability concerns, the attribute 'Party' is included in the statistical model but not presented. Horizontal bars present 95 per cent confidence intervals.

Strong and Weak Partisans

Lexicographic Preferences in Japan

Japan has several political parties in the National Diet; their mixed-member bicameral legislature features four different electoral systems. It is also a country with a remarkably different political culture compared to the United States, with a tradition of 'legacy' candidates that are related by blood or marriage to the previous incumbent, candidates that are former bureaucrats, a few women, and generally older candidates (Horiuchi, Smith, and Yamamoto 2020; Smith 2018).

Horiuchi, Smith, and Yamamoto's (2020) study included many personal attributes, such as gender, age, experience, prior occupation, parental political background, and hometown.[10] Figure A5 presents our results. The figure shows that in Japan, gender does not seem to be a second-order attribute. It is not a significant factor in any of our estimations in Figure A5.

Instead, age (79), hometown (outside), and celebrity status are second-order attributes, with larger effect sizes when party affiliation is held constant. Although elected politicians in Japan tend to be fairly old, voters in both the different and the same party estimations choose candidates aged 79 much less than other candidates. The tendency is significantly intensified when party affiliation is kept constant. The hometown of the candidate stated whether the candidate was from the same prefecture as the voter (the respondent was shown her actual prefecture, stated in a previous question, signaling an 'inside' candidate, or another prefecture signaling 'outside'). The voters punish Outside candidates more when party affiliation is the same.

One of the prior occupation groups also stands out as a second-order preference – celebrity status. Horiuchi, Smith, and Yamamoto define celebrity status as 'any candidate with a high profile from a previous career in television, movies, music, comedy, sports, news, and so on (in Japan, often described generally as a "talent")' (Horiuchi, Smith, and Yamamoto 2020, 80). When candidates have a celebrity status, they are less preferred by voters. This effect is significantly stronger when party affiliation is held constant.

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[10]Race is not one of the included attributes, which probably reflects the homogeneous nature of Japanese politics.

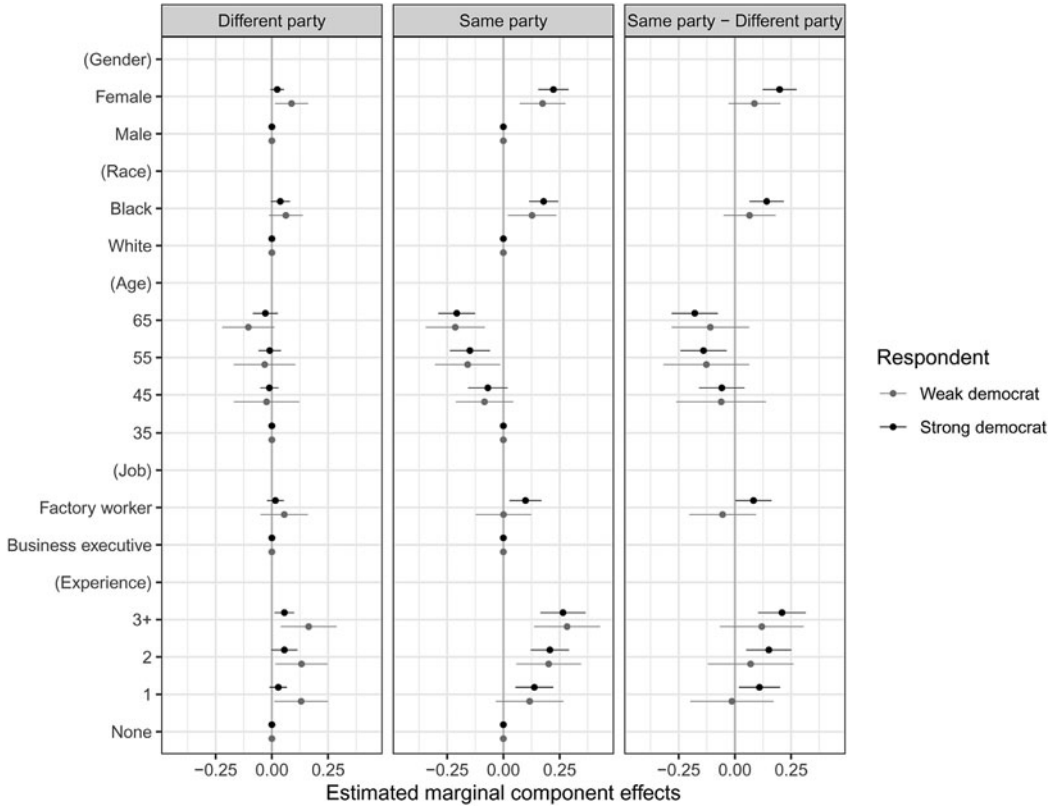**Figure A3.** Marginal causal effects with and without a tie on party affiliation – by Democratic respondent's partisanship. Pre-registered study.

Note: Horizontal bars present 95 per cent confidence intervals. Strength of partisanship is measured on a 7-point scale (1 = 'Strong Democrat', 2 = 'Weak Democrat', 3 = 'Independent Democrat', 4 = 'Independent', 5 = 'Independent Republican', 6 = 'Weak Republican', and 7 = 'Strong Republican'). In this analysis, we only use 1 and 3 for strong and weak Democrats, respectively.
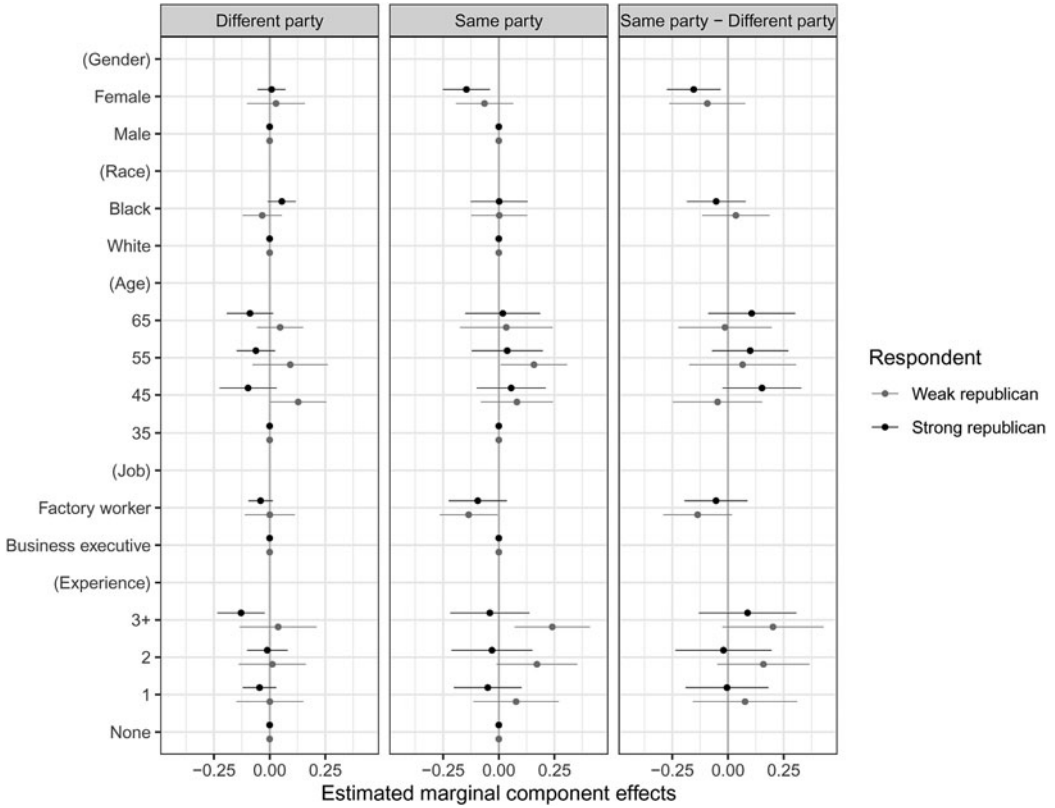
Figure A4. Marginal causal effects with and without a tie to party affiliation – by Republican respondent's partisanship. Pre-registered study.

Note: Horizontal bars present 95 per cent confidence intervals. Strength of partisanship is measured on a 7-point scale (1 = 'Strong Democrat', 2 = 'Weak Democrat', 3 = 'Independent Democrat', 4 = 'Independent', 5 = 'Independent Republican', 6 = 'Weak Republican', and 7 = 'Strong Republican'). In this analysis, we only use 5 and 7 for weak and strong Republicans, respectively.
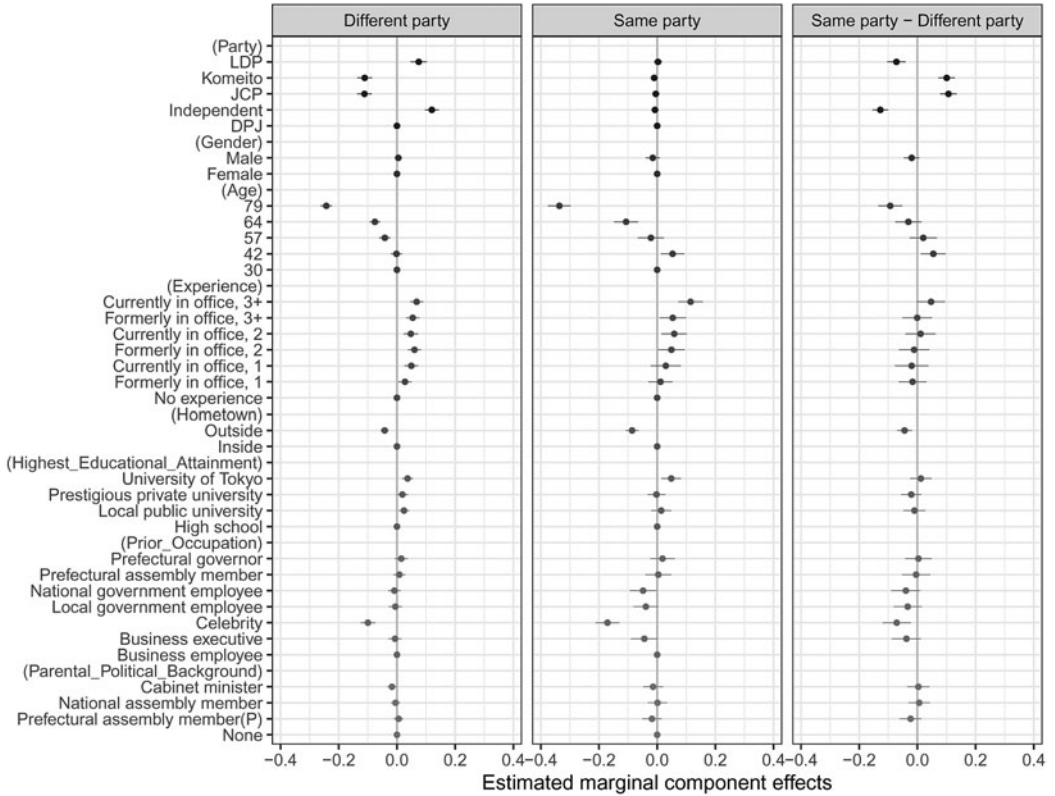
Figure A5. Marginal causal effects with and without a tie to party affiliation in Japan. Horiuchi, Smith, and Yamamoto (2020) Data (Study 3).
Note: Horizontal bars present 95 per cent confidence intervals.