Memory retrieval processes help explain the incumbency advantage

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Abstract

Voters prefer political candidates who are currently in office (incumbents) over new candidates (challengers). Using the premise of query theory (Johnson, Häubl & Keinan, 2007), we clarify the underlying cognitive mechanisms by asking whether memory retrieval sequences affect political decision making. Consistent with predictions, Experiment 1 (N = 256) replicated the incumbency advantage and showed that participants tended to first query information about the incumbent. Experiment 2 (N = 427) showed that experimentally manipulating participants' query order altered the strength of the incumbency advantage. Experiment 3 (N = 713) replicated Experiment 1 and, in additional experimental conditions, showed that the effects of incumbency can be overridden by more valid cues, like the candidates' ideology. Participants queried information about ideologically similar candidates earlier and also preferred these ideologically similar candidates. This is initial evidence for a cognitive, memory-retrieval process underling the incumbency advantage and political decision making.

Keywords: memory retrieval, query theory, incumbency advantage, information processing, political decision making

1   Introduction

Voters prefer candidates who are running for reelection (incumbents) over their challengers (Carson, Sievert & Williamson, 2015; Cox & Katz, 1996). This incumbency advantage has been established in both federal and local elections (Cox & Katz, 1996) and has grown steadily in the second half of the twentieth century in the U.S., in which a 90% re-election success rate was observed in the House of Representatives (Lee, 2001). Studies have also reported an incumbency advantage in other Western countries, such as Germany (Hainmueller & Kern, 2008) and the UK (Eggers & Spirling, 2014). Most accounts of the incumbency advantage stem from sophisticated analyses of historical election data (Kennedy, Wojcik & Lazer, 2017) and have also been corroborated with quasi and natural experiments (Ansolabehere, Snyder, & Stewart, 2000; Lee, 2001). This literature paints the following picture: voters tend to vote for maintaining the current state of affairs rather than change. Here, we test how memory retrieval processes involved in preference formation (Weber & Johnson, 2006) contribute to the incumbency advantage.

Current psychological perspectives on the incumbency advantage come in two forms. Both assume that the incumbency advantage is a manifestation of the status quo bias (Samuelson & Zeckhauser, 1988). The first suggests that people heuristically assume that the status quo is good, and likely better than alternatives (Eidelman & Crandall, 2014).

The second is more specific and suggests that this heuristic results from loss aversion (Moshinksy & Bar-Hillel, 2010; Quattrone & Tversky, 1988). While these accounts can predict when the incumbency advantage occurs, they remain vague about how this decision is formed.

We take an information processing approach. Building on query theory (Johnson et al., 2007), a memory-retrieval account of the status quo bias and preference formation (Dinner, Johnson, Goldstein, & Liu, 2011; Weber & Johnson, 2006), we examine how the order in which people retrieve information from memory while forming candidate preferences results in a preference for the incumbent. This approach integrates the heuristic perspective with memory retrieval mechanisms proposed by cognitive psychology.

1.1   Query Theory: A Memory Retrieval Processes Underlying Preference Formation

Information processing accounts of decision making focus on how information is sampled, retrieved, and integrated during the decision making process (Oppenheimer & Kelso, 2015). Query theory (Johnson et al., 2007) makes predictions about how information is retrieved from memory and integrated when constructing preferences (Weber & Johnson, 2006; see Zaller, 1992, for a political science account). It specifies three premises by which this information retrieval and integration process operates. First, people access preference-relevant information by posing evaluative questions, or queries, to themselves in sequential order. Second, salient and accessible information is retrieved earlier, is richer, and more numerous, and thus more heavily weighted in the decision making process. Third, according to the principles of output inference and retrieval inhibition (Anderson,

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Bjork & Bjork, 1994; Anderson & Spellman, 1995; Dempster, 1995), earlier queries interfere with the retrieval of other relevant information. As such, later queries are inhibited and less information is retrieved, leading these later queries to have less predictive value than earlier queries.

Query theory has been successfully applied to explain default effects (Dinner et al., 2011), asymmetric discounting (Appelt, Hardisty & Weber, 2011; Weber et al., 2007), the sunk cost bias (Ting & Wallsten, 2011), and the endowment effect (Johnson et al., 2007). For example, in research on the endowment effect (Kahneman, Knetsch & Thaler, 1990) sellers endowed with a mug assigned a higher monetary value to the mug than potential buyers. Johnson and colleagues (2007) found that sellers first queried value-increasing information about the mug, while buyers first queried value-decreasing information about the mug. Query order was significantly associated with the endowment effect. A subsequent experiment tested this effect experimentally, finding that reversing query order reduced the endowment effect.

Here we use query theory to investigate the incumbency advantage. Just as endowment acts as a cue in the mug task that prompts memory retrieval (Johnson et al., 2007), we predict the incumbent acts as a cue in political decision making. Thus, information about the incumbent will be more salient and accessible during the memory retrieval process. This should manifest in two ways. First, people will first retrieve information about the incumbent and only later about the challenger in the memory retrieval process. Second, people retrieve more information about the incumbent compared to the challenger.

2   Experiment 1:   Query Order and Candidate Preferences

We first experimentally manipulate incumbency and measure memory retrieval and incumbency support. We expect that people will support the incumbent more than the challenger and query information first and more often about the incumbent compared to the challenger. We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures for all studies. Sometimes this information is provided in the supplmental materials.

2.1   Method

Participants.   We recruited 300 participants[1] from the electronic crowdsourcing platform Amazon's Mechanical

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[1]For Experiment 1, we aimed for a target sample size of 300 participants to obtain 35 to 40 participants per cell. Using the effect size from Experiment 1, we conducted power analyses with 95% power for Experiments 2 and 3 to estimate the desired sample sizes. The stopping rule and the power analyses are reported in the supplmental materials.

Figure 1. Candidate description displayed to participants in the "Nickels incumbent" condition. The order and content of the descriptions were systematically varied between participants.

Turk (MTurk; Buhrmester, Kwang & Gosling, 2011). After removing participants with duplicate IP addresses, who were not U.S. citizens, or who did not complete the dependent measures, a sample of 256 participants remained (165 men, 91 women, M_{age} = 33.53, SD = 11.10).

Materials and procedure.   Participants read the description of two mayoral candidates and then listed all the thoughts that passed through their mind while considering which candidate they preferred. Next, they indicated their candidate preferences, coded their thoughts, and provided demographic information. All materials are available on the Open Science Framework.

Candidate descriptions.   Participants read descriptions of Greg Nickels and Mike McGinn, who were running for office in the city of Grand Rapids, MI., for at least 12 seconds. Both candidates were described as having relevant experience. The descriptions showed each candidate's slogan, background, leadership experience, and their campaign platform (Figure 1).The candidate descriptions were obtained and revised from Eidelman, Blancher and Crandall (2014). Either Nickels (n = 130) or McGinn (n = 126) was labelled as the incumbent. Additionally, the content of the descriptions

(i.e. if Nickels was from Seattle or Long Island; see Figure 1) and the display order (i.e., if they were displayed on the left or the right of the screen) was systematically varied across participants.

Aspect listing.   Participants were asked to think about and list all the reasons that passed through their minds while considering which mayoral candidate they preferred, using the aspect listing methodology (Dinner et al., 2011; Ericsson & Simon, 1984; Johnson et al., 2007). After entering their first response in a text box, participants clicked the submit button to bring them to the aspect listing question on the next screen where they could list a second response. This process was repeated until participants indicated they did not have any more reasons to list ($M = 2.95$, $SD = 0.82$, Range [1, 6]). As in previous work (Johnson et al., 2007), responses were limited to 200 characters and participants were not trained in advance.

Candidate preferences.   Five items measured participants' candidate preferences (Eidelman et al., 2014): "Who is best-qualified to be mayor?", "Who is most likely to be a good mayor?", "Who is more like the kind of person who should be mayor?", "Who do you prefer to be elected?" and "Who would you be most likely to vote for?". The end-points of the nine-point scale were the candidates and their incumbent vs. challenger labels matching the order the participants read them. For example, in the condition matching Figure 1 the end-points read, *Incumbent Greg Nickels* (1) and *Challenger Mike McGinn* (9). All responses were recoded so that higher scores indicated a preference for Greg Nickels, regardless of whether he was the incumbent ($\alpha = .97$). The midpoint of the scale (5) reflected the participant showed no preference for one candidate over the other.[2]

Self-coding of aspects.   Participants coded the reasons they listed in the aspect listing task, as either in favor or against each candidate (e.g. Dinner et al., 2011; Johnson et al. 2007). Responses indicating that the aspect was "in favor of Greg Nickels" and those "against Mike McGinn" were grouped together, as in a dichotomous choice a reason to vote against McGinn results in a vote for Greg Nickels. Similarly, responses "in favor of Mike McGinn" and "against Greg Nickels" were grouped together.

Query order (SMRD).   We measured query order with the standardized mean rank difference (SMRD) score (Johnson et al., 2007). This reflects participants' tendency to list reasons supporting Nickels before reasons supporting McGinn.

It is defined as $2(MR_{McGinn} - MR_{Nickels})/n$, where MR = median rank of reasons supporting Nickels or McGinn in the participant's sequence and n = the total number of reasons in the participant's sequence. The SMRD score ranges from –1 (all reasons supporting McGinn were listed before those supporting Nickels) to 1 (all reasons supporting Nickels were listed before those supporting McGinn). For participants who listed reasons supporting only one candidate, the SMRD score was calculated by setting the median rank of the missing candidate to s + 1 and n = s + 1, where s = the total number of reasons listed by the participant. This ensures that such participants received an SMRD score of 1 when they list only reasons in support of Nickels and an SMRD score of -1 when they list only reasons in favor of McGinn.

Query content.   Using participants' self-coded responses, we also computed their query content score (Dinner et al., 2011): query content =

$$\frac{(POS_{Nickels} + NEG_{McGinn}) - (POS_{McGinn} + NEG_{Nickels})}{(POS_{Nickels} + NEG_{McGinn}) + (POS_{McGinn} + NEG_{Nickels})},$$

where $POS_{Nickels}$ ($NEG_{Nickels}$) indicates the number of positive (negative) reasons for Nickels, while POS_{McGinn} (NEG_{McGinn}) indicates the number of positive (negative) reasons for McGinn. The query content score ranges from –1 (only reasons supporting McGinn) to 1 (only reasons supporting Nickels). Zero indicates that an equal number of reasons were listed for both candidates. The query content score and SMRD were very strongly correlated across all three studies: $r_{Exp.\ 1}(254) = .86$, $p < .001$; $r_{Exp.\ 2}(166) = .77$, $p < .001$; $r_{Exp.\ 3}(711) = .91$, $p < .001$.

Demographics.   Participants provided basic demographic information (e.g., age, gender, political ideology) and indicated their familiarity with the city of Grand Rapids, MI, on a seven-point Likert scale from 1 (*not at all familiar*) to 7 (*very familiar*). On average, participants were unfamiliar with Grand Rapids, MI ($M = 2.56$, $SD = 1.66$).

2.2 Results

Incumbency advantage.   Participants preferred the incumbent, $t(252.43) = 5.87$, $p < .001$, $d = 0.74$[3] (Figure 2A). Both candidates benefited from being labelled as the incumbent.

Query order.   As predicted, people queried information about the incumbent earlier, $t(253.28) = 2.78$, $p = .006$, $d = 0.35$ (Figure 2B). The SMRD score was significantly higher

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[2]Participants also answered two questions regarding their perception of *other's* candidate preferences. Exploratory analyses for this dependent variable can be found in the supplmental materials.

[3]For all *t*-tests, unequal variances are assumed and Welch's approximation to degrees of freedom are reported.
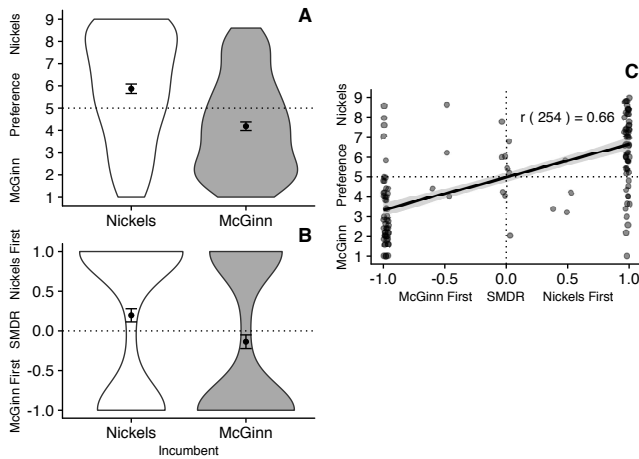
Figure 2. Experiment 1: (A) Violin plots of candidate preferences and (B) SMRD scores for both incumbency conditions. Error bars represent standard errors. The dotted line represents the neutral midpoint of the scale. (C) Correlation between candidate preference (y-axis) and SMRD scores (x-axis). The grey region surrounding the regression line represents the 95% confidence interval.

in the Nickels incumbent condition (M = 0.20, SD = 0.95) than in the McGinn incumbent condition (M = -0.14, SD = 0.97). Consistent with the idea that query order is used in preference construction, the SMRD score was also positively correlated with candidate preference, $r(254)$ = .64, p < .001 (Figure 2C). The order in which information is queried from memory is related to preferences and, therefore, also to the incumbency advantage.

Query content. Participants also listed more reasons in support of the incumbent, $t(252.64)$ = 4.40, p < .001, d = 0.55. When Nickels was the incumbent, participants listed more reason supporting Nickels (M = 0.27, SD = 0.83), and listed more reasons supporting McGinn when he was the incumbent (M = -0.20, SD = 0.86). The tendency to list more queries supporting the incumbent was positively correlated with candidate preference, $r(254)$ = 0.83, p < .001.

2.3   Discussion

Experiment 1 provided two key findings. First, we replicated the incumbency advantage in a controlled experimental setting. Second, we measured the memory retrieval processes that may underlie the preference formation in favor of the incumbent. As predicted, participants retrieved information about the incumbent earlier and more often compared to information about the challenger. This result provides initial evidence that the incumbency advantage may be due to information retrieval processes that favor the incumbent.

3   Experiment 2: Altering Query Order Alters Decisions

In Experiment 1, we found that query order is associated with incumbency and candidate preference. However, it is unclear whether information retrieval order also plays a causal role and whether retrieval order is separate from query content. Thus, we experimentally alter query order (e.g., Appelt, et al., 2011; Dinner et al., 2011; Johnson et al., 2007) while holding query content constant. We predict that the incumbency advantage will be reduced by asking voters to first query information about the challenger and only later about the incumbent. These earlier queries in support of the challenger should be weighted more heavily and lead to the elimination, or at least an attenuation, of the incumbency advantage. Just as reversing the query order will reduce the incumbency advantage, we also expect that emphasizing the typical query order will enhance the incumbency advantage. By comparing the effects of query manipulations to a neutral condition, a close replication of Experiment 1, we can see how these manipulations alter the strength of the incumbency advantage independent of query content.

3.1   Method

Participants.   We recruited 600 participants from MTurk who did not participate in Experiment 1. Based on the same criteria as in Experiment 1, 73 participants were removed from the analysis. Additionally, participants who had a query order or query content[4] scores inconsistent with the instructions, showing they had disregarded the instructions altogether, were also removed from analyses (n = 100). A sample of 427 participants remained (224 men, 203 women, M_{age} = 34.33, SD = 11.05).

Materials and procedure.   Participants followed a link to the survey and were randomly assigned to one of the six experimental conditions (Table 1). Materials were the same as in Experiment 1 (candidate preference: α = .96;

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[4]28 participants had a correct query order score but an incorrect query content score. Nine of these participants had followed the instructions but incorrectly self-coded their reasons. These 9 participants were *not* removed from the analysis.

Table 1: Number of participants randomly assigned to each experimental condition.

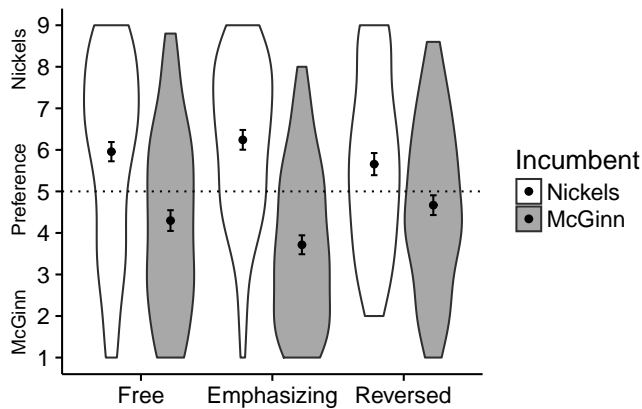|	Neutral	Emphasizing	Reversed
Incumbent Nickels	97	64	60
Incumbent McGinn	72	67	67

Figure 3. Experiment 2: Violin plots of candidate preferences. Error bars represent standard errors. The dotted line represents the neutral midpoint of the scale.

familiarity with Grand Rapids, MI: $M = 2.56$, $SD = 1.60$), unless discussed otherwise.

Aspect listing. Participants in the neutral condition received the same aspect listing instructions as in Experiment 1 (see supplmental materials for replication analyses). Participants listed three reasons on average ($M = 2.93$, $SD = 0.68$, Range [0, 5]).

In the emphasizing condition, the participant's query order was emphasized by instructing participants to first list two reasons supporting the incumbent and only later two supporting the challenger. In the reversed condition, we instructed participants to first list two reasons in supporting of the challenger and only later two supporting the incumbent. The instructions for these conditions read: "Please think of a reason why you personally would want to vote for incumbent Mayor Greg Nickels or against challenger Mike McGinn." The order in which candidate names were mentioned in the instructions matched the experimental conditions.

Self-coding of aspects. The instructions and responses were the same as in Experiment 1, and included the option to self-code aspects as *"other"*.[5] This response category was added because some participants in Experiment 1 commented that the aspects they listed did not fit any of the provided response categories. It is likely that participants reflect on information not pertaining directly to the candidates when forming preferences.

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[5]The analysis reported below includes "other" as a response option. However, only 10 participants in the final sample used this response category and removing them from the analysis did not alter the conclusions reported below.

3.2 Results

Altering query order alters candidate preference. A 2 (incumbent) × 3 (query order) ANOVA revealed a significant interaction effect of incumbency and query order on personal candidate preference, $F(2, 421) = 4.55$, $p = .011$, $\eta^2 = .02$. Simple effects revealed that participants preferred the incumbent in the neutral condition, $F(1, 421) = 26.95$, $p < .001$, $d = 0.75$. This preference was approximately doubled in the emphasized condition, $F(1, 421) = 49.52$, $p < .001$, $d = 1.48$. And the incumbent advantage was nearly cut in half in the reversed condition compared to the neutral condition, $F(1, 421) = 7.32$, $p = .007$, $d = 0.49$ (Figure 3).

3.3 Discussion

In Experiment 2, we experimentally manipulate query order. Consistent with predictions, reversing query order reduced the incumbency advantage by almost half, compared to the neutral condition. Similarly, emphasizing query order nearly doubled the size of the incumbency advantage. This provides further evidence that information retrieval processes can be used to understand, but also to intervene in political decision making.

There was one main concern: One-hundred participants in the emphasizing and reversed conditions did not follow the aspect listing instructions and so their query orders were not manipulated. That is, these participants show no significant difference in SMRD scores between the two incumbency conditions, $t(78.89) = 0.83$, $p = .411$. It may be that participants did not pay attention or that changing query order does not come easily. This is not to say that query order does not matter – there was positive correlation between SMRD scores and candidate preferences, $r(79) = .63$, $p < .001$, for these participants. It does suggest that instructions to change query order are effective only when instructions are followed.

4 Experiment 3: Salient Information is Queried Earlier

Political decision making typically does not happen in a vacuum; voting decisions are multiply determined. One predictor of vote choice is political ideology, especially in the two-party system of the U.S. (Jacoby, 1991; Jost, 2006). Voters support candidates from the political party that they are affiliated with. It seems unlikely that voters will vote for a political candidate who does not share their ideology, even if they are an incumbent. Instead, voters will likely consider partisanship or ideology cues to be more important and valid in their decision making process, and hence their information retrieval process, than incumbency. Initial support for this idea comes from Hardisty, Johnson and Weber (2010) who found that Democrats and Republicans exhibited

different query orders when forming a preference in the tax domain. This experiment may inform us about the boundary conditions of the incumbency advantage and how query order is affected by an additional and a potentially more valid decision cue.

4.1   Method

Participants.   We recruited 800 MTurk workers who did not participate in the previous two studies via the software TurkPrime (Litman, Robinson & Abberbock, 2016), which enabled us to collect participants in small batches over two consecutive days. Participants were removed from the analysis based on the same criteria as in Experiment 1 ($n = 3$). Additionally, we asked participants to classify themselves as either Democratic or Republican. Those who could not be classified were excluded from the analysis ($n = 84$). A sample of 713 participants remained (308 men, 405 women, $M_{age} = 37.36$, $SD = 12.31$).

Experimental design.   The experiment employed a 2 (incumbency) × 3 (ideological compatibility) between-subjects design. Incumbency was manipulated as in Experiment 1. Ideological compatibility was manipulated by including an ideological standpoint in the candidate descriptions and matching participants with the ideological standpoints (see below).

Materials and procedure.   Participants followed a link to the online survey and were randomly assigned to one of the six experimental conditions (Table 2). All materials were the same as in Experiment 1 (candidate preference: $\alpha = .97$, number of reasons listed: $M = 2.91$, $SD = 0.78$, Range [1, 7][6]; familiarity with Grand Rapids, MI: $M = 2.66$, $SD = 1.70$), with the exception of the candidate descriptions and the measurement of ideological compatibility.

Candidate descriptions.   In the neutral condition, no ideological standpoint was added to the candidate descriptions (direct replication of Experiment 1). To manipulate the political ideology of the candidates in the other experimental conditions, we included one ideological standpoint as the

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[6]We did not include the response category "other" for the self-coding as reasons, because in of its infrequent use in Experiment 2.

Table 2: Number of participants randomly assigned to each experimental condition.

	Neutral	Compatible	Incompatible
Incumbent Nickels	131	116	108
Incumbent McGinn	119	121	118

second bullet point under the "campaign centers on" section (Figure 1) for both the incumbent and the challenger. The political standpoints were adapted from the websites of a prominent Democratic (Hilary Clinton) and Republican (Ted Cruz) politician, respectively. At the time, both politicians were competing for their party's presidential nomination in the 2016 U.S. primary elections. The liberal standpoint read "protecting women's access to reproductive health care, including contraception and safe, legal abortion in city clinics" and the conservative standpoint read "removing burdensome restrictions for law-abiding citizens to obtain concealed carry licenses for firearms". We choose these statements because they are issues on which Democrats and Republicans have polarized opinions (Pew Research Center, 2014). Therefore, participants should easily be able to judge whether the mayoral candidates are liberal or conservative. The standpoints were added such that if the incumbent supported the liberal standpoint than the challenger supported the conservative standpoint and the reverse.

Ideological compatibility.   After aspect coding, we measured participants' party affiliation. They responded to the question "Generally speaking, do you usually think of yourself as a Democrat, Republican, Independent, or something else?" Five-hundred and twenty-four participants indicated a clear party affiliation with either the Democrats or the Republicans. They then indicated whether they were strong, moderate, or slight Democrats/Republicans. The participants who did not clearly identify with a party were asked "Do you think of yourself as closer to the Democratic party or to the Republican party?" We classified participants who reported being closer to one party or the other as supporting that party. Participants who responded that the felt close to neither party ($n = 84$) were excluded from the sample as for these participants we could not determine which ideological standpoint would be most compatible with their beliefs.

Participants who read a scenario where the incumbent supported a standpoint consistent with the politics of their identified party were coded as compatible (e.g., a Democratic participant reading about an incumbent with a liberal standpoint). Participants who read a scenario where the incumbent supported a standpoint inconsistent with their party's politics were coded as incompatible (e.g., a Democratic participant reading about an incumbent with a conservative standpoint).

4.2   Results

Incumbency effect.   A two-way factorial ANOVA revealed a significant incumbency×ideological compatibility interaction on candidate preferences, $F(2, 707) = 67.11$, $p < .001$, $\eta^2 = .15$ (Figure 5A).[7] An analysis of the simple effects

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[7]Levene's Test of homogeneity of variance (median centered) revealed a significant violation homogeneity, $F = 3.55$, $p = .004$. An additional analysis
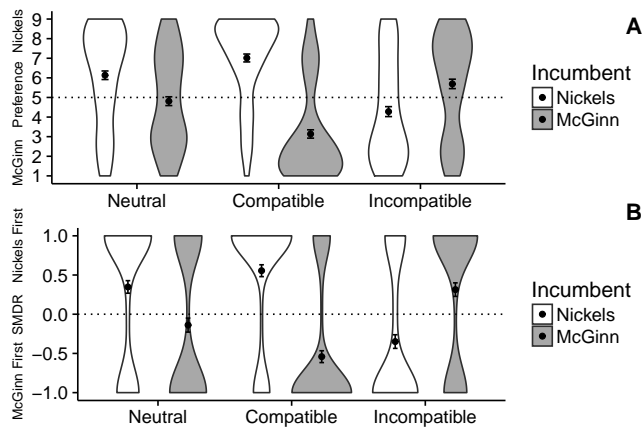
Figure 5. Experiment 3: Violin plots of (A) personal candidate preferences and (B) SMRD scores for both incumbency conditions at each level of ideological compatibility. Error bars represent the standard errors. The dotted line represents the neutral midpoint of the scale.

revealed that in the neutral condition, the findings of Experiment 1 were replicated. When no ideological cue was added to the candidate descriptions, participants experienced a significant effect of incumbency, $F(1, 707) = 18.11$, $p < .001$, $d = 0.53$. This incumbency effect increased substantially, when the incumbent's ideology was compatible with that of the participant, $F(1, 707) = 147.75$, $p < .001$, $d = 1.71$. However, if the incumbent's political standpoints did not match the political ideology of the participants, they were significantly more likely to vote for the challenger, $F(1, 707) = 18.71$, $p < .001$, $d = -0.54$. In sum, participants exhibited an incumbency effect when no ideological information about the candidates was provided. However, a cue about political ideology overrode the effect of incumbency, with participant being more likely to vote for the candidate with whom they were ideologically compatible.

Query order.　　We also found a significant incumbency×ideological compatibility interaction on participants' query orders, $F(2, 707) = 56.81$, $p < .001$, $\eta^2 = .13$ (Figure 5B).[8] A simple effects analysis showed that participants queried information about the incumbent first in the neutral condition, $F(1, 707) = 18.26$, $p < .001$, $d = 0.52$, which pro-

vided a direct replication of Experiment 1. This tendency became stronger when the incumbent's political ideology was compatible with their own, $F(1, 707) = 88.06$, $p < .001$, $d = 1.33$. However, this relationship flipped when the incumbent held an opposing political ideology. In this incompatible condition, participants first queried information about the challenger, $F(1, 707) = 30.61$, $p < .001$, $d = -0.72$.

Across all conditions the SMRD score was significantly, positively correlated with personal candidate preference, $r(711) = .78$, $p < .001$. When considering a decision between two political candidates, the order in which aspects are queried from memory is significantly associated with candidate preferences.

Query content.　　We also found a significant incumbency×ideological compatibility interaction on participant's query contents, $F(2, 707) = 59.45$, $p < .001$, $\eta^2 = .14$.[9] A simple effects analysis showed that participants queried more information about the incumbent in the neutral condition, $F(1, 707) = 11.28$, $p = .001$, $d = 0.40$. This tendency became stronger when the incumbent's political ideology was compatible with their own, $F(1, 707) = 103.30$, $p < .001$, $d = 1.47$. However, this relationship flipped when the incumbent held an opposing political ideology. In this incompatible condition, participants queried more information about the challenger, $F(1, 707) = 28.05$, $p < .001$, $d = -0.69$.

Across all conditions, query content was also significantly, positively correlated with personal candidate preference, $r(711) = .87$, $p < .001$.

4.3　Discussion

We find that the incumbency advantage is present only when no or compatible information about the incumbent's political ideology is provided. In fact, incumbency along with ideological compatibility is the winning hand, as this combination provides the strongest support for the incumbent. Conversely, when the incumbent supports issues that the participant does not, the participant is more likely to indicate a preference for the challenger. This pattern was also reflected in participants' query order and query content. Participants focused on incumbency as a cue when no ideological information was added. However, as predicted, political ideology provided to be a stronger and more valid cue in this context and thus had a stronger effect on participants' query order and content.

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to deal with the heterogeneity of variance is reported in the supplmental materials. The results confirmed the conclusions drawn from the two-way factorial ANOVA.

　　[8]Levene's Test of homogeneity of variance (median centered) revealed a significant violation of homogeneity, $F = 3.55$, $p = .004$. As there is no standard nonparametric test for a 2x3 factorial design, we addressed this issue by dichotomizing the SMRD score and conducting a logistic regression analysis. Dichotomization of the SMRD score is a viable option for this robustness check as only 31 participants had scores other than -1 and 1. We excluded these participants from analysis. The results confirmed the conclusions drawn from the two-way factorial ANOVA (see supplmental materials).

　　[9]Levene's Test of homogeneity of variance (median centered) revealed that there was as significant violation of the homogeneity assumption, $F = 5.01$, $p < 0.001$. As no traditional non-parametric test is available, we conducted a logistic regression to confirm our conclusions (see supplmental materials). The results of this analysis mirror those of the main analysis reported here.

5   General Discussion

Our experiments contribute to the growing interest in applying information processing paradigms to decision making (Oppenheimer & Kelso, 2015); in our case political decision making. This research shows that a well-known phenomenon in U.S. historical elections can also be understood by how voters retrieve information from memory while forming their candidate preferences. Query order is predictive of the incumbent advantage. Participants who exhibited a preference for the incumbent were more likely to first retrieve information supporting the incumbent. Furthermore, experimentally manipulating query order altered the strength of the incumbency advantage. By emphasizing or reversing query order we increased or reduced the incumbency advantage. This result suggests that memory retrieval processes make up at least part of the psychological mechanisms behind the incumbency advantage.

In our experiments the incumbency advantage appears limited to contexts where incumbency is the most valid cue. Common sense predicts that it is unlikely that a strong Republican will vote for a Democratic candidate, even if she is the incumbent, and vice-versa. Extending prior work on query theory, Experiment 3 provides evidence that more a salient cue, for example partisanship, can override weaker cues, for example incumbency. Participants first queried information about the candidate with similar political beliefs, who they were also more likely to prefer, suggesting that when more valid cues are available, people use them.

Our findings about query order and cue validity provide support for one of the key theoretical assumptions of query theory: People query information related to the most salient option earlier from memory, which in turn is predictive of their preference formation (Weber & Johnson, 2006). This assumption, however, has been merely an assertion because prior investigations tested only contexts where one piece of information could provide a salient cue to the decision maker. In this research, we tested this assumption. Consistent with prior work that focused on only one cue, incumbency was salient to the participants and was related to query order and candidate preferences. However, in an American context, adding the more valid cue of political ideology changed participant's pattern of information retrieval. It appears that, when both cues pointed in the same direction, the addition of stronger cues had an additive effect in determining preferences. When the cues conflicted, people relied more on the valid cue (political ideology) and the weaker cue (incumbency). Given the importance of cues in the assumptions of query theory, our comparison of competing cues is an important addition to the query theory literature.

Our contribution can be seen by considering how query theory has been applied to investigate when consumers opt for a default rather than choosing a new, environment friendlier product (Dinner et al., 2011). Information about the default was retrieved earlier in consumers' query sequences. However, throughout the entire set of studies, the default remained the only salient cue to participants. Yet, in real life, other cues, analogous to political ideology, may have a stronger effect on purchasing decisions. To the extent to which partisanship is loyalty to a political brand, brand loyalty (He, Li & Harris, 2012) and strong brand commitment may override default effects and thus produce more choices in favor of the preferred brand. Furthermore, participants with strong pro-environmental attitudes (Stets & Biga, 2003) may also show a different pattern of memory retrieval, favoring environmentally friendly products. As such, both query theory and consumer choice can benefit from identifying and measuring which cues are salient in a given choice context.

5.1   Directions for Future Research

There are several directions for future research. Query theory speaks only to how information is retrieved from memory during preference formation. It does not address how the decision-relevant information is gathered in the first place, if at all. These other information processing effects, such as information search or sampling, may also help explain the incumbency advantage. If incumbency acts as a salient cue to voters, they may be drawn to information about the incumbent rather than the challenger. They may first actively search for or spend more time considering information pertaining to the incumbent compared to the challenger. Especially during long election campaigns, when voters have access to a large amount of information about the candidates, how they go about sampling this information may be directly related to which information is more easy retrieved from memory at the time of the final preference is formed and voting decision is made.

It is also important to note that the reported experiments were all conducted in an American context. Other contexts may show variations of the results we find. Although we focused on the United States, the incumbency advantage is a phenomenon that has also been found in other Western electoral settings (Eggers & Spirling, 2014; Hainmueller & Kern, 2008; Kendall & Rekkas, 2012). Nonetheless, some studies on incumbency (e.g., in India, Uppal 2009) did not find a clear incumbency advantage (see Fowler & Hall, 2016, for a critical overview of exceptions to the incumbency advantage). From our perspective, an interesting question is how query order functions in these other contexts and whether incumbency serves as a relevant cue in these contexts.

Americans exhibit a strong partisan affiliation (Deaux, Reid, Mizrahi, & Ethier, 1995; Iyengar, Sood & Lelkes, 2012), and clearly perceive political ideology to be a valid cue in their political decision making (Jost, 2006). We expect our findings related to ideology to replicate in other electoral contexts characterized by strong partisan affilia-

tions. However, in different situations other cues may prove to be more valid. For example, partisan identification is typically weaker in countries with many different political parties. Although specific issues might be seen as valid cues, specific parties may not be as valid as they would be in the United States. Similarly, even within the American context, the validity of ideological cues may be weaker for people who are indifferent or uninvolved in politics.

Finally, a query theory approach to the incumbency advantage can also be applied to political elections in which more than two candidates are running for office or in multi-party systems. Quattrone and Tversky (1988) propose that in such multi-choice elections the incumbency effect should become stronger. However, they do not provide evidence for this claim. Therefore, it is would be prudent to apply the query theory approach to election scenarios with multiple candidates, such as primary elections in the U.S. Such an approach would also contribute to our theoretical understanding of query theory, which so far has only been experimentally applied to dichotomous choices. However, under these circumstances the assumption that a reason against one candidate is a reason in support of the other does not hold. Consequently, additional hypotheses and statistical measures regarding the effects of positive and negative information queried will be necessary.

5.2 Conclusion

In our experiments, we integrated the heuristic perspective with memory retrieval processes to gain a better understanding of the incumbency advantage. Our findings indicate that the order in which voters retrieve information from memory may, at least in part, help explain voters' preference for the incumbent. In sum, we believe that it is be fruitful for psychologists to integrate information processing and other cognitive mechanisms when investigation why people adopt certain political positions and how they make decisions in general.

References

Anderson, M. C., Bjork, R. A., & Bjork, E. L. (1994). Remembering can cause forgetting — Retrieval dynamics in long-term-memory. *Journal of Experimental Psychology - Learning Memory and Cognition, 20*(5), 1063–1087. http://dx.doi.org/10.1037/0278-7393.20.5.1063.

Anderson, M. C., & Spellman, B. A. (1995). On the status of inhibitory mechanisms in cognition — Memory retrieval as a model case. *Psychological Review, 102*(1), 68–100. http://dx.doi.org/10.1037/0033-295x.102.1.68.

Ansolabehere, S., Snyder, J. M., & Stewart, C. (2000). Old voters, new voters, and the personal vote: Using redis-

tricting to measure the incumbency advantage. *American Journal of Political Science, 44*(1), 17–34.

Appelt, K. C., Hardisty, D. J., & Weber, E. U. (2011). Asymmetric discounting of gains and losses: A query theory account. *Journal of Risk and Uncertainty, 43*(2), 107–126. http://dx.doi.org/10.1007/s11166-011-9125-1.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk. *Perspectives on Psychological Science, 6*(1), 3–5. http://dx.doi.org/10.1177/1745691610393980.

Carson, J., Sievert, J., & Williamson, R. (2015). *Assessing the rise and development of the incumbency advantage in congress.* Paper presented at the Congress and History Conference, Vanderbilt University.

Cox, G. W., & Katz, J. N. (1996). Why did the incumbency advantage in the U.S. House elections grow? *American Journal of Political Science, 40*(2), 478–497.

Deaux, K., Reid, A., Mizrahi, K., & Ethier, K. A. (1995). Parameters of social identity. *Journal of Personality and Social Psychology, 68*(2), 280–291.

Dempster, F. N. (1995). Interference and inhibition in cognition: An historical perspective. In F. N. Dempster & C. J. Brainerd (Eds.), *Interference and inhibition in cognition* (pp. 3–26). San Diego, CA: Academic Press.

Dinner, I., Johnson, E. J., Goldstein, D. G., & Liu, K. (2011). Partitioning default effects: why people choose not to choose. *Journal of Exerimental Psychology: Applied, 17*(4), 332–341.

Eggers, A. C., & Spirling, A. (2014). *The advantages and disadvantages of incumbency: Theory and evidence from British elections 1832–2001.* Working paper. http://andy.egge.rs/papers/Eggers_Spirling_Incumbency_Effects_UK_201404.pdf.

Eidelman, S., Blanchar, J. C., & Crandall, C. S. (2014). *A status quo advantage for political incumbents.* Working paper.

Eidelman, S., & Crandall, C. S. (2014). The intuitive traditionalist: How biases for existence and longevity promote the status quo. *Advances in Experimental Social Psychology, Vol 50*, 53–104. http://dx.doi.org/10.1016/B978-0-12-800284-1.00002-3.

Ericsson, K. A., & Simon, H. Z. (1984). *Protocol analysis: Verbal reports as data* (Revised Edition ed.). Cambridge, MA: The MIT Press.

Fowler, A., & Hall, A. B. (2016). *No evidence of incumbency advantage.* Working paper.

Hainmueller, J., & Kern, H. L. (2008). Incumbency as a source of spillover effects in mixed electorial systems: evidence from a regression-discontinuity design. *Electoral Studies, 27*, 213–227.

Hardisty, D. J., Johnson, E. J., & Weber, E. U. (2010). A dirty word or a dirty world? Attribute framing, political affiliation, and query theory. *Psychological Science, 21*(1), 86–92. http://dx.doi.org/10.1177/0956797609355572.

He, H., Li, Y., & Harris, L. (2012). Social identity perspective on brand loyalty. *Journal of Business Research, 65*(5), 648–657. http://dx.doi.org/10.1016/j.jbusres.2011.03.007.

Iyengar, S., Sood, G., & Lelkes, Y. (2012). Affect, not ideology: A social identity perspective on polarization. *Public Opinion Quarterly, 76*(3), 405–431.

Jacoby, W. G. (1991). Ideological identification and issue attitudes. *American Journal of Political Science, 35*(1), 178–205. http://dx.doi.org/10.2307/2111443.

Johnson, E. J., Haubl, G., & Keinan, A. (2007). Aspects of endowment: A query theory of value construction. *Journal of Experimental Psychology-Learning Memory and Cognition, 33*(3), 461–474. http://dx.doi.org/10.1037/0278-7393.33.3.461.

Jost, J. T. (2006). The end of the end of ideology. *American Psychologist, 61*(7), 651–670. http://dx.doi.org/10.1037/0003-066x.61.7.651.

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1990). Experimental tests of the endowment effect and the coase theorem. *Journal of Political Economy, 98*(6), 1325–1348. http://dx.doi.org/Doi10.1086/261737.

Kendall, C., & Rekkas, M. (2012). Incumbency advantages in the Canadian parliament. *Canadian Journal of Economics, 45*(4), 1560–1585.

Kennedy, R., Wojcik, S., & Lazer, D. (2017). Improving election prediction internationally. *Science, 335*, 515–520. http://dx.doi.org/10.1126/science.aal2887.

Lee, D. S. (2001). The electoral advantage to incumbency and voters' valuation of politicians' experience: A regression discontinuity analysis of elections to the U.S. House. *NBR Working Paper Series*.

Litman, L., Robinson, J., & Abberbock, T. (2016). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods*, 1–10. http://dx.doi.org/10.3758/s13428-016-0727-z.

Moshinksy, A., & Bar-Hillel, M. (2010). Loss aversion and the status quo label bias. *Social Cognition, 28*(2), 191–204.

Oppenheimer, D. M., & Kelso, E. (2015). Information processing as a paradigm for decision making. *Annual Review of Psychology, 66*, 277–294.

Pew Research Center. (2014). Section 4: Political Compromise and Divisive Policy Debates. *Political Polarization in the American Public*. Retrieved from http://www.people-press.org/2014/06/12/section-4-political-compromise-and-divisive-policy-debates/.

Quattrone, G. A., & Tversky, A. (1988). Contrasting rational and psychological analyses of political choice. *American Political Science Review, 82*(3), 719–736. http://dx.doi.org/Doi10.2307/1962487.

Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty, 1*, 7–59.

Stets, J. E., & Biga, C. F. (2003). Bringing identity theory into environmental sociology. *Sociological Theory, 21*(4), 398–423. http://dx.doi.org/DOI10.1046/j.1467-9558.2003.00196.x.

Ting, H., & Wallsten, T. S. (2011). A query thoery account of the effect of memory retrieval on the sunk cost bias. *Psychonomic Bulleting and Review, 18*, 767–773.

Uppal, Y. (2009). The disadvantaged incumbents: estimating incumbency effects in Indian state legislatures. *Public Choice, 138*(1–2), 9–27.

Weber, E. U., & Johnson, E. J. (2006). Constructing preferences from memory. In S. Lichtenstein & P. Slovic (Eds.), *The Construction of Preference* (pp. 397–410). New York: Cambridge University Press.

Weber, E. U., Johnson, E. J., Milch, K. F., Chang, H., Brodscholl, J. C., & Goldstein, D. G. (2007). Asymmetric discounting in intertemporal choice: A query-theory account. *Psychological Science, 18*(6), 516–523.

Zaller, J. R. (1992). *The nature and origins of mass opinion*. Cambridge, UK: Cambridge University Press.