Fewer Voters Opt Out of Decisions to Reject the Worst Candidate

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Abstract

Voting is central to democracy, yet many people choose not to vote[1–4]. Voters appear to be especially likely to opt out of voting when they are unhappy with their options[5,6]. Past research shows similar patterns of decision avoidance when people choose between unattractive consumer goods[7–9] and hints at a potential remedy: inverting the goal of choosing[10–16]. When choosing between unattractive options, decision-makers have an easier time rejecting the worst option than selecting the best one[10,11,14–16]. Across two laboratory studies, we show that inverting the typical voting goal—rejecting the worst candidate rather than selecting the best one—can substantially diminish tendencies to opt out of voting, particularly when choosing between undesirable candidates. These findings were corroborated in a third study surveying real-world voting preferences – survey responders who were asked which of two US presidential candidates they would vote *for* were much more likely to opt out of committing (i.e., indicated that they were undecided) relative to those who were asked which of the two they would vote *against*. By bridging research across psychology and political science, our work provides a deeper understanding of when and why people are likely to sit out of an election. Critically, we also provide the first experimental evidence that inverting the goal of voting can provide a valuable tool for dissuading voters from abstaining, particularly in cases where they know which candidates they like least but are unwilling to cast a ballot for the one they like most.

Voting is fundamental in democracies, but not everyone votes[1–3]. In just the last two US presidential elections, more than a third of registered voters opted not to vote[4]. The tendency to sit out the vote appears to be particularly pronounced among voters who are dissatisfied with all of the available candidates[5,6]. Given that elections are ultimately determined by those who show up to the ballot box and are often won by relatively small margins, understanding the factors that determine who will opt out, when, and how to reverse this trend can be highly consequential.

Emerging research on preference-based choice (e.g., choices between consumer goods) offers important clues as to a source and potential solution for individuals opting not to vote. First, it has been shown that when decision-makers are given the option to opt out of a decision, they are most likely to do so when faced with unattractive options[7–9]. Second, it has been separately shown that choices between unattractive options become significantly easier (e.g., faster) when the goal is to reject the worst option than when the goal is to select the best option[10,11,14–16]. These findings have been shown to reflect a basic property of decision-making – decisions about which option is best accumulate to a decision boundary (i.e., the point where a person feels ready to make a choice) more readily when choosing among good options; conversely, decisions about which option is worst accumulate to that decision boundary more readily when choosing between bad options[10,15,16]. Extrapolated to the domain of voting, this work collectively makes two predictions. First, voters will be most likely to opt out of voting when they perceive all of the candidates as being undesirable. Second, and critically, asking voters to *reject* the least preferred candidate (cf. anti-candidate voting[17] or negative voting[18–22]) rather than selecting the most preferred candidate (as is typically the case) will make it easier to choose between those candidates and thus less likely that they will opt out of voting.

A novel laboratory-based measure of voter opt-out behavior

To test these predictions, we recruited 100 participants to perform a novel voting task (N = 91 in the final sample; see Materials and Methods for inclusion and exclusion criteria and Table S1 for participant demographics). In this task, participants first identified their positions on a series of political issues (e.g., abortion rights, gun policies, etc.) and indicated how important each issue is to them (Figure 1a; for details of issues and item-level analyses, see Materials and Methods and Tables S5-6). Based on this information, we were able to synthesize candidates – each characterized by their position on two issues (Figure 1b) – who we predicted would be more or less desirable to that participant based on how aligned their positions are with the participant's own, and how important those issues are to the participant (Figure S1a, see Materials and Methods). For instance, for a participant who indicated strong support for increased legalization of abortion and rated this issue as very important, we could synthesize candidates who share this view (highly desirable), or who have a diametrically opposed position (highly undesirable), or who carry any level of desirability in between (e.g., because they hold intermediate positions on this issue, or because the issues they align with the participant on are of more moderate importance to that participant).

Participants viewed a series of ballots, each consisting of two of these hypothetical candidates. Across these ballots, we systematically varied (a) how (un-)desirable the two candidates are on

average (overall desirability) and (b) how much more desirable one candidate is than the other (relative desirability) (Figure S1b). Critically, for each ballot, participants were first given the opportunity to opt out of choosing a candidate. If they chose this "No Vote" option, they would move on to the next ballot. If they chose to vote, they would move on to a second stage of the trial, where they would select one of the two candidates. Notably, similar to real-world voting, opting out carried no penalty and was time-saving, offering the opportunity to complete the experiment sooner.

Participants were randomly assigned to one of two conditions (Figure 1a). Participants in both conditions performed identical voting tasks, with one exception: when choosing between hypothetical candidate pairs, one group was asked to select the candidate they preferred more (Select condition), whereas the other was asked to reject the candidate they preferred less (Reject condition).

To validate our approach to varying the desirability of hypothetical candidates based on each participant's positions, we first examined trials in which participants opted to vote. We found that both groups made choices consistent with what would be predicted based on the projected desirability of the two candidates and based on their respective voting goals. Participants in the Select group were more likely (79.0 % of all ballots) to choose the candidate more aligned with their policy views (more desirable); participants in the Reject group were more likely (72.7% of all ballots) to reject the candidate less aligned with their policy views (less desirable). For both groups, participants were more likely to choose the candidate that better aligned with their choice goals (more desirable candidate in the Select group; less desirable candidate in the Reject group) as candidate desirability was more distinct from one another (higher relative desirability; Select: $p < 0.001$, Table S7; Reject: $p < 0.001$, Table S9; Figure 1c). These patterns were also reflected in the speed with which participants made their decisions: faster when the candidates were predicted to be more dissimilar from one another (i.e., one was much more desirable than the other) and slower when they were predicted to be more similar to each other ($p < 0.001$, Table S8; Figure S2a).

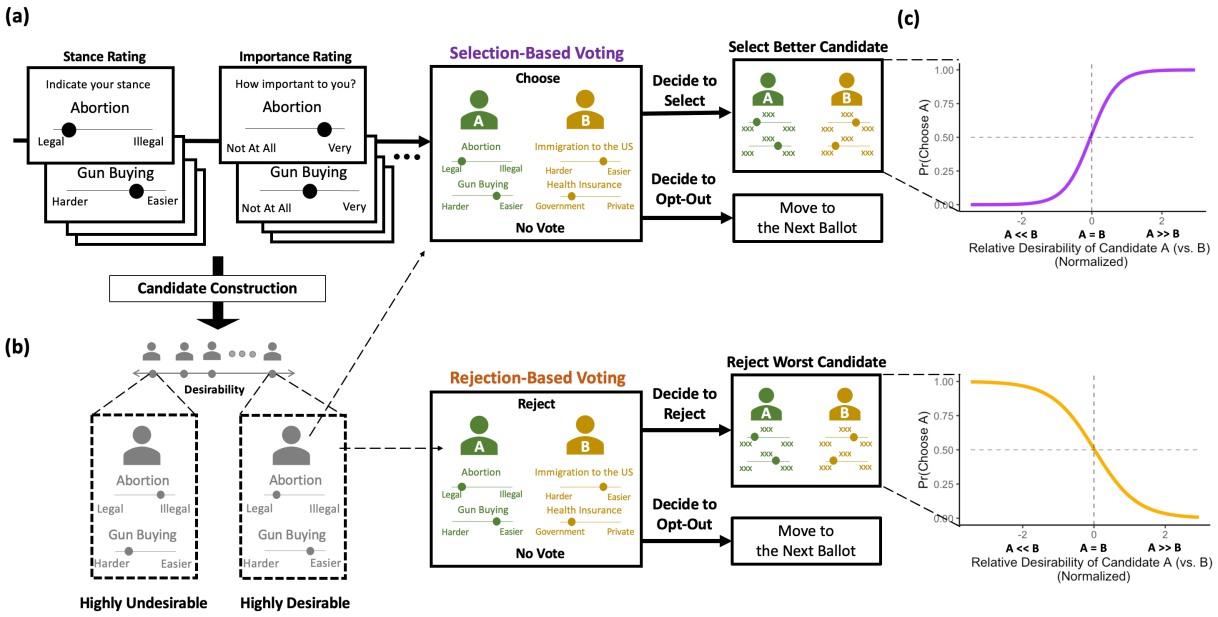

Figure 1. Voting task. a. Participants first viewed a series of 13 political issues, and for each issue, participants indicated their positions and the importance of the issue to them. They then viewed a series of 100 ballots involving pairs of hypothetical candidates. Depending on their randomly assigned group, participants were asked to either vote for the better candidate (Selection-Based Voting, top) or vote against the worse candidate (Rejection-Based Voting, bottom). For each ballot, all participants first had the option of either (1) going on to vote on the ballot (select or reject from the pair) or (2) indicating a "no vote" (opting out). If they opted out, they would move directly to the next ballot. **b.** We used a given participant's issue stances, weighted by their importance to the participant, to synthesize a wide array of candidates who varied in their alignment with that participant's views, from those who are well-aligned (highly desirable) to completely misaligned (highly undesirable). Candidates were paired together on ballots so as to vary the difference in desirability between them (relative desirability) and how desirable the two are on average (overall desirability). **c.** The more desirable one of the candidates was than the other (e.g., Candidate A on the left side vs. Candidate B on the right side), the more likely participants were to choose them in the Select condition (top), and the more likely they were to choose the opposite side in the Reject condition (bottom).

Voter participation is lowest for lose-lose choices but is restored by rejection-based voting

Thus, when participants chose to vote, their votes were aligned with their preferences. For any given ballot, though, participants could also choose not to vote and did so frequently. In the Select condition, we found that participants opted out of voting on 40.3 % of ballots and that the likelihood of opting out could be predicted by two main characteristics of the ballot. First, and perhaps most intuitively, participants were more likely to opt out of voting when the candidates were similarly desirable (lower relative desirability, $p < 0.001$, Table S13; Figure S2c). However, controlling for this relative desirability effect, we also found that opt-out decisions were sensitive to the overall desirability of their candidate options – participants in this condition were much more likely to opt out of voting the lower the desirability of these candidates (lower overall

desirability, $p < 0.001$, Table S13; Figure 2a, purple line). In fact, the undesirability of one's options (i.e., having to face a "lose-lose" choice) emerged as by far the strongest predictor of opting out, with participants choosing to opt out of voting 82.8 % of the time when selecting between the bottom quartile of overall desirability (the most undesirable candidate pairs) compare to an opt-out rate of 5.6 % when selecting between the top quartile (Figure 2b, purple bars). This pattern also contrasts starkly with factors contributing to choices of which candidate to select, which were driven primarily by relative rather than overall desirability (Figure S3).

Opt-out behavior was markedly different for participants in the Reject group. Overall, Reject participants were less likely to opt out of voting than Select participants (33.3 % vs. 40.3 %, $p = 0.014$, Wilcoxon rank sum test $W = 727$), but where they differed most was in how these opt-out choices varied with the overall desirability of the candidate options. Whereas Select participants showed a steep increase in opting out as the desirability of their options decreased (Figure 2a, purple line), Reject participants did not (interaction $p < 0.001$, Table S15; Figure 2a, orange line). Compared to the 82.8 % opt-out rate for the bottom quartile of ballots when selecting the best candidate, participants who rejected the worst candidate only opted out of 27.6 % of these ballots (Figure 2b).

Interestingly, rejection instead led to a modest trend in the direction opposite of what was seen for selection, with Reject participants opting out more for most desirable candidates ($p = 0.008$, Table S14; Figure 2a, orange line). This reversal can be indicative of participants having difficulty deciding which to reject when both candidates are highly desirable. Consistently, a reversal in decision time was observed when participants opted to choose between candidates - similar to findings from studies of consumer choice[10,15,16], participants were able to choose the fastest (i.e., easiest) when selecting the better of two highly desirable candidates ($p < 0.001$, Table S8; Figure S4a) and when rejecting the lesser of two highly undesirable candidates ($p = 0.039$, Table S10; interaction $p < 0.001$, Table S12; Figure S4a). Collectively, these findings confirm our prediction that candidate rejection can decrease tendencies to opt out of voting for undesirable candidates, by making it easier to choose between these candidates.

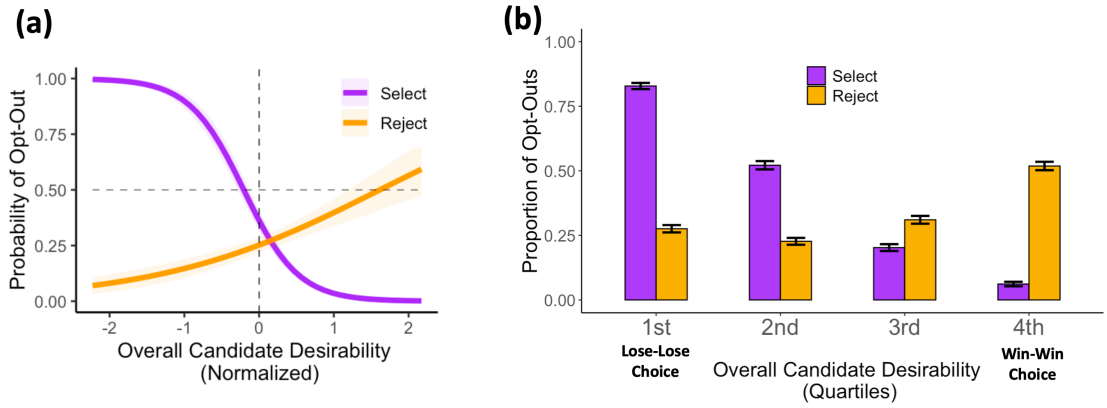

Figure 2. Rejection-based voting selectively reduces opting out with undesirable candidates. a. Participants who were asked to vote for the better candidate (Select group, purple) were much more likely to opt out the more undesirable the candidates were overall. Participants who were asked to vote against the lesser candidate (Reject group, orange) showed the opposite trend – the more desirable the candidates were, the more likely to opt-out. **b.** As a result, when participants were faced with lose-lose choices (lowest quartiles of candidate desirability), they were three times (82.8 % vs. 27.6 %) more likely to opt out of voting to select than reject.

The benefits of rejection-based voting extend to abstention from compulsory voting

Findings from this first study suggest that framing an election in terms of candidate rejection has the potential to dramatically increase voter participation by reducing the likelihood of an individual opting or "sitting" out of a vote. However, even when one chooses to participate in an election (including in cases where this is compulsory), it is possible to abstain from voting by actively indicating one's preference for a null alternative (e.g., "abstain," "no vote," or "uncommitted"). The same applies to situations where a person is actively polled for their preference in advance of an election, in which case they often have the option to decline from committing to a single candidate by indicating that they remain undecided. To test whether the benefits of rejection-based voting carry over to forced-choice contexts like these, we recruited a separate group of 100 participants to perform a different version of our voting task (Figure 3a). In this study, rather than being able to make a separate opt-out decision prior to selecting between the candidates, participants instead made a single choice with each ballot, with their options consisting of the two candidates and a third option allowing them to abstain from voting on that ballot ("No Vote").

Mirroring our first study, we found that participants faced with these three options and charged with selecting the best candidate (N = 39) were most likely to select the no-vote option when candidates were most undesirable ($p < 0.001$, Table S13). Faced with the same three options, participants who were charged with rejecting the worst candidate (N = 43) were, on the whole, significantly less likely to opt out of voting (23.1% vs. 39.0%, $p < 0.001$, Wilcoxon rank sum test $W = 303.5$). Once again, the decrease in opt-out behavior was most pronounced when making lose-lose choices (e.g., 25.2 % vs. 86.0 % for the lowest quartile of overall desirability; Figure 3b) and

was modestly reversed when making win-win choices (e.g., 31.6 % vs. 5.5 % for the highest quartile; Figure 3b). We found a similar reversal in decision time when participants opted to vote (interaction: $p < 0.001$, Table S12; Figure S4b), again indicating that rejection became more difficult as candidate desirability increased.

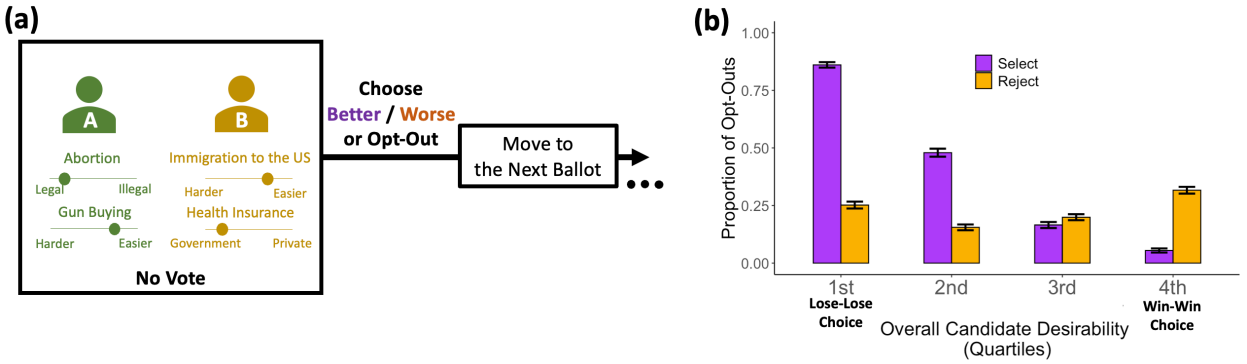

Figure 3. Rejection-based reductions in opt-out behavior extend to compulsory choices. a. Participants in Study 2 performed the same task as shown in Figure 1, but instead of making a series of binary choices (vote vs. no-vote, then Candidate A vs. B), they instead made a single choice among the three core options (Candidate A, Candidate B, and no-vote). **b.** Mirroring the patterns we observed in Study 1 (Figure 2b), participants in the Select group (purple bars) were again much more likely to opt out of this choice than participants in the Reject group (orange bars), particularly true for "lose-lose" choices (86.0 % vs. 25.2 %).

Reducing voter opt-out can produce more representative election outcomes: Evidence from agent-based simulations

Across these two studies, we see that candidate desirability exerts an influence on voting behavior in two ways. The relative desirability of the candidates (the extent to which one is preferred to the other) determines which candidate would be selected if they were to vote. By contrast, the overall desirability of the candidates (the extent to which the candidates are seen as good or bad options) determines whether a vote is cast for *any* of the candidates, or whether the voter opts out of making a choice. Given that elections are determined only by the votes that are cast, one implication of this systematic source of voter opt-outs is that it could produce election outcomes that deviate from the preferences of the majority of eligible voters (i.e., from what would be expected based only on how much the population prefers one candidate over another). To explore this possibility, we used choice data from our voting task to simulate agents with varying preferences for two hypothetical candidates ("Red Candidate" vs. "Blue Candidate") and to project their likelihood of voting for each of those candidates or opting out, under different voting conditions (Figure 4 and Figure S5, see details in Materials and Methods).

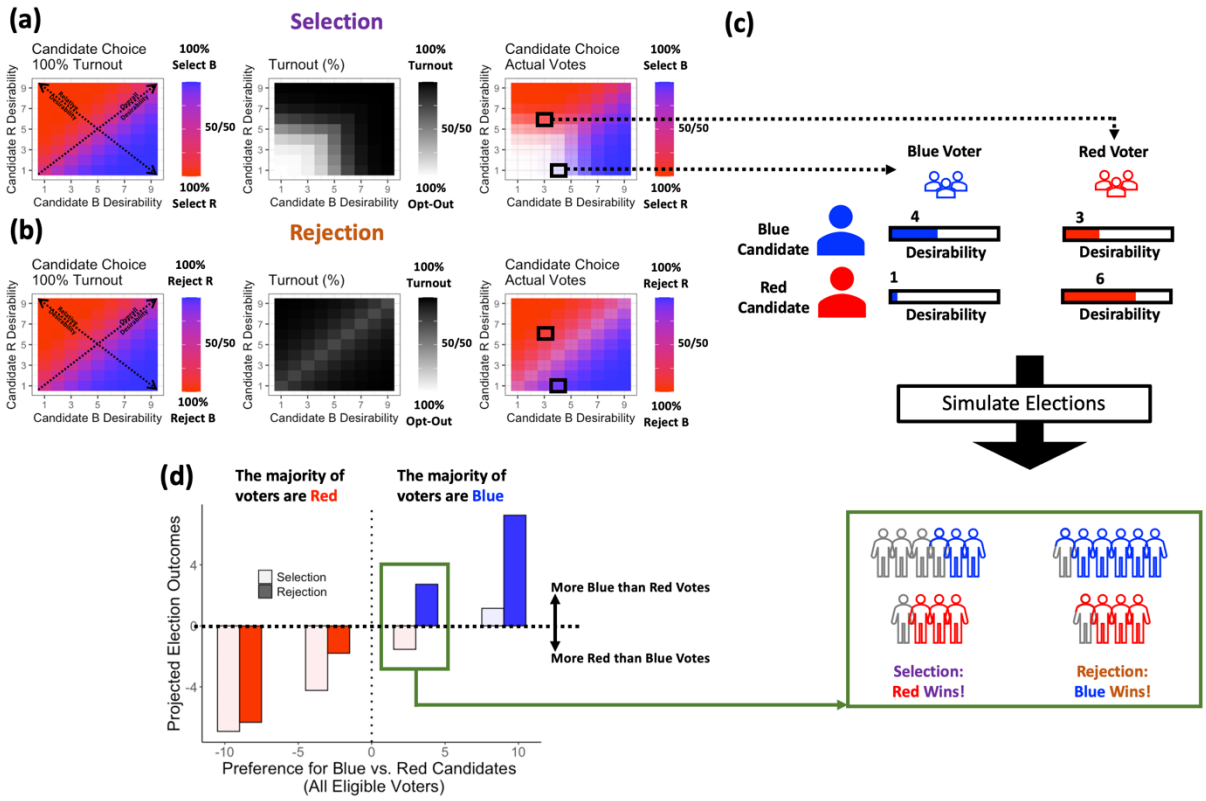

Figure 4. Simulations of selection- and rejection-based elections a. We simulated populations of voters based on patterns of behavior observed across Study 2 participants (see Figure S5 for Study 1), separately for Selection-based voting (**a**) and Rejection-based voting (**b**). **Left:** Under conditions where all voters cast a ballot for one of two candidates, these simulations predict that participants will be more likely to select a candidate the more desirable they are relative to the other candidate (blue-red gradient). **Middle:** When an opt-out option is introduced, participants increasingly opt out of voting the more undesirable the candidates are (black-white gradient). **Right:** As a result, these "lose-lose" voters will be less represented in the election (white area), leading to election outcomes that are determined both by the relative desirability of the candidates (primarily determining choice if voters vote) and their overall desirability (primarily determining whether a voter will vote). **b.** With rejection-based voting, opt-out behavior (middle) is much less determined by overall desirability and more by how similar the candidates are (i.e., voter indifference between the outcomes). Voters are, therefore, well-represented across levels of overall candidate desirability. **c.** We simulated conditions in which two sets of voters favor opposing candidates by the same margin (e.g., 3 points difference in desirability), but Red voters like both candidates more overall (6 vs. 3 for Red vs. Blue Candidate), whereas Blue voters like both candidates less (1 vs. 4). **d.** Under these conditions, in a traditional (selection-based) election, the Red candidate can win the election even if the Blue voters are in the majority (lighter bars), given the unequal levels of opt-out behavior between the two sets of voters. In a rejection-based election (darker bars), election outcomes are more representative of the population preferences (reflected in more symmetric bars around the horizontal midpoint).

When simulating conditions in which all agents are forced to select which of these candidates they prefer (i.e., no possibility of opt-outs, or "full turnout"; Figure 4a, left panel), we see that the likelihood of the Blue Candidate receiving a given agent's vote depends primarily on how much better that candidate is than the other candidate (relative desirability; deviation from the diagonal line), independent of how much the voter likes the Blue Candidate (overall desirability; deviation from the origin). If we simulate the same elections in a world in which voter opt-outs are permissible (Figure 4a, middle panel), we see that such opt-outs would occur disproportionately in cases where agents find both candidates unappealing (even if one of these candidates is consistently less unappealing than the other). These findings imply that the voters who feel worse about both candidates overall will have less influence on the ultimate election outcomes due to opt-outs. This can be demonstrated readily by simulating two sets of voters who have opposite rankings of the two candidates, but one group likes both candidates less (Blue Voters; Figure 4c, left) than the other (Red Voters; Figure 4c, right). In this case, we can show that even when the majority of the population are Blue Voters (who prefer Blue versus Red Candidate by a 3-point margin) because these voters are more prone to opt-out, the election can result in a win by the Red Candidate (Figure 4d).

These cases of elections deviating from population preferences occur when simulating traditional, selection-based choice (i.e., choosing the better candidate). When we instead simulate voting behavior under rejection-based choice, we find that election outcomes are much more faithful to the preferences of the population of eligible voters (Figure 4d), such that the Blue versus Red Candidate is expected to win when Blue versus Red Voters are in the majority, largely irrespective of the overall desirability of the candidates. This results from the diminished impact of overall desirability on opt-outs by individual voters (Figure 4b, middle panel), making it such that an agent's likelihood of voting for the Blue Candidate (by rejecting the Red Candidate) is primarily determined by relative candidate desirability (Figure 4b, right panel), mirroring choices in settings with full turnout (Figure 4b, left panel).

Rejection-based framing reduces opting out of candidate selection in a real-world election survey

By systematically varying the desirability of candidates for individual participants, our two laboratory studies show that rejection-based voting (rejecting the worst candidate) can be effective at reducing a given person's tendency to opt out of voting for certain choices (those between undesirable candidates) and not others. To test whether our findings generalize to real-world voting decisions, we ran a preregistered survey study (https://osf.io/djy4h; see Materials and Methods for details). We recruited a thousand US participants on Prolific who self-identified as Independents — a group that is most likely to hold negative views of both Democratic and Republican candidates — to respond to a poll for the upcoming 2024 US general elections (final N = 967, see Materials and Methods for inclusion and exclusion criteria). Survey responders were randomly assigned to indicate which of the two major candidates (Joe Biden or Donald Trump) they intended to vote for (Selection-Based Poll, N = 484) or which candidate they planned to vote against (Rejection-Based Poll, N = 483). Critically, both polls included an identical third option ("I'm undecided") which could serve as an opt-out option for respondents who did not want to

commit to either candidate. When responding to the traditional, selection-based poll format, 67% of participants selected one of the two candidates, whereas the remaining 33% opted not to commit (indicated that they were undecided). As predicted, we found that having participants instead indicate who they would vote against resulted in a significant decrease in this opt-out-like behavior, with 80% of responders now selecting one of the two candidates and only 20% indicating that they were undecided (Selection vs. Rejection $p < 0.001$, Table S16; Figure 5).

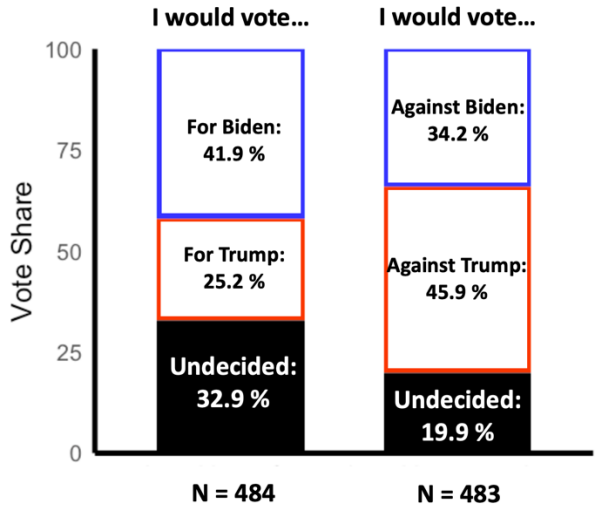

Figure 5. Independent voters are less likely to opt out of voting against (vs. voting for) a US presidential candidate. In a preregistered survey, self-identified Independents were randomly assigned to indicate whether they would vote for (Select group) or vote against (Reject group) Joe Biden or Donald Trump in the 2024 US presidential election (survey data collected 05/28/2024 on Prolific). Both groups were also given the option to indicate that they were undecided. Survey responders were significantly more likely to respond 'undecided' when they would otherwise need to vote for a candidate (32.9 %) than if they would otherwise need to vote against a candidate (19.9 %).

Discussion

Using a novel laboratory-based voting task, we show that voter decisions are driven by two major forces: the relative desirability of the candidates (which one the voter likes more) primarily determines which candidate will be chosen if a vote is cast, whereas the overall (un-)desirability of the candidates (how much the voter likes each one) primarily determines whether a vote is ever cast. We provide the first evidence that rejection-based voting (rejecting the lesser candidate rather than selecting the better candidate) can significantly reduce the tendency to opt out of voting. This reduction in opt-out behavior was greatest when participants were facing "lose-lose" choices (i.e., only undesirable options), a situation that characterizes recent elections in the United States[5,23] and elsewhere[22]. Our simulations show that situations like these are most liable to produce election and/or polling outcomes that diverge from the preferences of the citizenry at large and that rejection-based voting can produce more representative outcomes by revealing the preferences of those who would otherwise opt out. As one important demonstration of this,

we show that a rejection-based poll of the US presidential election generates nearly 40% fewer 'undecided' voters among Independents, that is, more Independent voters opting to indicate a preference between the two major candidates.

On the surface, the idea of focusing voters on the candidate they want to reject brings to mind the well-known practice of focusing attention on a candidate's weaknesses (also referred to as negative campaigning[24–26]). Our simulations show that the two strategies are not only theoretically dissociable (e.g., the weaker candidate being rejected can still be strong in absolute terms) but also differ in the ways each is predicted to be most effective (Table S17; see Supplementary Text A). While negative campaigning can serve to lower the perceived desirability of the opposing candidate, the effect of this can lead to increased opt-outs rather than increased support for the alternate candidate. This may help account for the mixed success of such strategies[24–26]. Rejection-based voting, by contrast, does not seek to alter a voter's preference but rather to express that preference by voting rather than opting out. These theorized differences should be tested in real-world voting behavior. While our findings demonstrate that choice framing can alter decisions at the individual level when the choice itself is altered, whether this scales to the broader population and to framing approaches that are available in the absence of such choice architectures (e.g., messaging campaigns[27,28]) remains a critical question to be tested in future work.

Our findings have implications not only for how voters choose between political candidates but also for how political parties select these candidates in the first place (cf. candidate selection methods[29]). Our simulated elections suggest that political systems that allow voters to abstain may be susceptible to exploitation by minority parties that select a candidate who is better aligned with their base than the majority candidate is with theirs. In these situations, even though the majority of eligible voters might agree on a preferred candidate, those who are most likely to show up to vote may hold the opposite view. In cases like these, the winning candidate would be the one people were most willing to cast a vote for, but not the one people most preferred. That is, unless voters choose to reject this possibility.

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Competing interest

The authors declare that they have no competing interests.

Data and material accessibility

All experimental de-identified data, data analysis scripts, and simulation scripts are publicly available upon publication.

List of Supplementary Materials

Materials and Methods
Supplementary Text
Figures S1 to S5
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Supplementary Materials

Materials and Methods

Here we provide our experimental procedures, data analytic pipelines, and simulation settings to compare selection-based voting and rejection-based voting. We begin by describing the participant recruitment, inclusion and exclusion, the two versions of the voting task, and the preregistered poll survey. We then outline our data processing strategies and statistical analyses. Finally, we describe how we simulate elections.

Experimental Procedures

All three studies (two voting tasks and one preregistered study, named Studies 1, 2, and 3 in the following) were approved by Brown University's Institutional Review Board under protocol 1606001529. Participants were recruited on the Prolific platform (https://www.prolific.com/). The inclusion criteria for Studies 1 and 2 were those aged 18 to 55 and fluent in English. In Study 3, in addition to the above two criteria, we used the pre-screening function provided by Prolific to recruit those who self-identified as Independents (see https://osf.io/djy4h). We excluded participants who had participated in our previous decision-making-related studies from the recruitment. After signing the consent form, participants in Studies 1 and 2 were instructed to perform a voting task built up by the PsychoPy software (https://www.psychopy.org/) and completed a short Qualtrics survey afterward. In Study 3, participants were directed to the poll survey after signing the consent form. After completing the survey, participants in all three studies were debriefed about the specific study's aim and directed back to Prolific for payment processes.

Participant

Two samples of 100 participants were recruited on Prolific for Studies 1 and 2, respectively, in March 2024. We excluded data from those participants who either (1) decided to vote on all ballots without opting out once or (2) had equal to or more than 50% of ballots on which they opted to vote but chose the candidate inconsistent with their assigned goals (e.g., a participant assigned to Reject condition but 60% of voted ballots they chose the best candidate would be excluded). 91 and 82 of the participants in Studies 1 and 2, respectively, were included for further data analysis.

In Study 1, 44 participants (F/M = 19/25, M_{Age} = 37.0, SD_{Age} = 9.31) were those assigned to the Select condition (N = 2 excluded by (1), additionally N = 1 excluded by (2)), and 47 (F/M = 28/19, M_{Age} = 37.3, SD_{Age} = 9.79) were those assigned to the Reject condition (N = 5 excluded by (1), additionally N = 1 excluded by (2)). In Study 2, 39 participants (F/M/Prefer not to respond = 14/23/2, M_{Age} = 33.9, SD_{Age} = 9.30) were those assigned to the Selection condition (N = 5 excluded by (1), N = 2 excluded by (2)), and 43 (F/M = 25/18, M_{Age} = 33.6, SD_{Age} = 9.84) were those assigned to the Rejection condition (N = 7 excluded by (1), N = 3 excluded by (2)). One participant who did not complete the study in Study 2 was also excluded. The assignment of conditions was based on

a random seed automatically generated by the PsychoPy experimental code. Demographic information for Studies 1 and 2 is summarized in Tables S1 and S2, respectively.

In Study 3, 1000 participants were recruited on Prolific on May 28th, 2024. Two participants completed the Qualtrics survey but failed to submit the completed Prolific study. The experimenter paid them manually, and their survey data was included. One participant submitted the Prolific study but lacked Qualtrics survey results. In the end, 1001 survey responses were collected. For the first prediction that we preregistered (see Statistic Analysis), we excluded data from those participants who did not report themselves as eligible voters (see Survey Question). 493 participants were those assigned to the Select condition (N = 6 excluded), and 485 were those assigned to the Reject condition (N = 17 excluded). For the second prediction that we preregistered, we further excluded data from those participants who reported "Prefer not to respond" in the poll question (see Survey Question). Additional 9 participants were excluded in the Select condition (final N = 484, Gender: F/M/Prefer not to respond = 251/230/3, M_{Age} = 35.6, SD_{Age} = 9.30); additional 2 participants were excluded in the Reject condition (final N = 483, Gender: F/M/Prefer not to respond = 237/242/4, M_{Age} = 34.9, SD_{Age} = 9.30). The assignment of conditions was based on the Qualtrics build-in function "Randomizer." Sample sizes of the two conditions were adaptively matched with the option "Evenly Present Elements" in Qualtrics checked. Demographic information for Study 3 is summarized in Tables S3.

Voting Task

In Studies 1 and 2, participants performed a voting task in which they could decide whether to vote between candidates or opt-out. Participants first saw 13 political issues (modified from Jenke and Huettel's work[30], see Table S5 for a full list) and were asked two questions in a row for each issue: "Indicate your stance on (a specific issue, e.g., abortion) …" and "How important is this issue to you?" For each issue, participants first saw and answered the stance question; the importance question then came after the answer to the stance question had been submitted. Participants were asked to use sliding scales to answer both questions, with the scale ranging from -3 (left) to 3 (right). For the stance question, the descriptions on each end of the scale vary by issue: for example, abortion has its left end as "Legal" and right end as "Illegal;" spending on social security has its left end as "Decrease" and right end as "Increase." For the importance question, the descriptions are always "Not important at all" on the left and "Very important" on the right. See Table S6 for descriptions and summary statistics of all stance and importance questions.

After participants had answered all the political issue questions, they went through instructions and practices before they entered the main task, in which they saw through a hundred ballots. On each ballot, participants in the Select group were told to vote for the candidate they liked most, whereas those in the Reject group were told to vote against the candidate they liked least. In both groups, participants could choose a "No Vote" option to opt out, such that they would opt out of the current ballot and move to the next one. In Study 1, participants would need to make a binary choice between vote (with "Choose" and "Reject" presented as options for Select and Reject groups, respectively) and no vote before they could select or reject one candidate; in

Study 2, participants would make a trinary choice at once among two candidates and the No Vote option.

Each ballot featured two hypothetical candidates presented side by side, with two sliding scales and indicators revealing their positions on two political issues. In Study 1, participants used the arrow keys Up and Down to decide whether to vote; the options “Choose/Reject” and “No Vote” appeared on the top and bottom of the screen, with the locations randomized across participants. If participants opted to vote, they then used the arrow keys Left and Right to decide which candidate to select or reject. In the Select group, the chosen candidate would be surrounded by a colored frame (yellow or green, consistent with the color of the candidate); in the Reject group, the chosen candidate would be surrounded by a red frame and a red cross would be placed on the candidate figure, indicative of being rejected. To prevent online participants from spending infinite time on the task, we set an implicit 2-minute deadline for each trial (ballot) without informing participants beforehand. The trial would automatically end and move to the next ballot if the deadline was hit, which were rare events in both Studies 1 and 2 (Study 1: 0.10 %, Study 2: 0.16 %).

To generate ballots for each participant, we first ranked 13 issues based on each participant’s importance ratings and used the 1^{st} to 8^{th} issues for ballots in the main task, the 9^{th} to 12^{th} issues for the ballots in the practice session, and discarded the issue which a participant regarded as least important. Out of the top 8 important issues, we created a table of 252 hypothetical candidates with possible combinations of two issues (8*7/2 = 28 unique pairs) and stances: each issue could have three possible levels (left, neutral, right) of stances with random noise. Out of the 252 candidates, we generated 100 candidate pairs presented on the ballots for each participant with the following algorithm: first, we randomly sampled from the space of overall and relative desirability of candidates (cf. Figure S1b) constrained by each participant’s own ratings and derived the corresponding desirability of the two candidates. We then looked up the table of 252 candidates to find the two candidates that had the closest desirability (for individual candidate desirability, see Desirability of Candidates) under the constraint that the two candidates expressed views on four unique issues. We repeated the above procedure once while ensuring that the four issues used did not overlap with those in the previous candidate pair. Consequently, we had two ballots with four candidates, and 8 issues were all being used. Through 50 iterations, we generated 100 candidate pairs that controlled the occurrence of issues, with every issue occurring exactly 50 times. The order of 100 candidate pairs that participants would see on the ballots was randomized. As a result, we also set up distributions of overall and relative desirability of candidates that were similar across participants and conditions (Figure S1b). In addition, we counterbalanced the candidate pairs such that the desirability of the candidate on the left was higher than that on the right in half of the ballots. We used yellow and green colors to make the two candidates in a ballot distinct from each other, and the colors of the candidates were counterbalanced across the task.

In the practice session, participants went through an example of 8 ballots, with the arrangement of issues on the ballots pre-defined in an Excel table. To familiarize participants with all the possible responses and corresponding keys, we instructed them on whether to vote or opt-out

and which key should be pressed for each ballot. After the practice session, we set up a quiz to remind participants of their assigned goals. A sample question was, "Imagine you prefer the green candidate over the yellow candidate; which one should you vote for (against)?" For the above question, participants in the Select group should choose the green candidate, while participants in the Reject group should choose the yellow candidate. Participants needed to make 4 correct responses in a row (or hit an upper limit of 20 quiz questions being asked) to pass the quiz and move forward to the final reminders preceding the main task.

Desirability of Candidates

With participants' stance and importance ratings, we constructed their desirability for each candidate as follows[30]:

$$D_{i,j} = \frac{10}{12}\sum_{k=1}^{2} importance_{i,\ issue\ k} * [1 - \frac{abs(stance_{j,\ issue\ k} - stance_{i,\ issue\ k})}{6}]$$

Where $D_{i,j}$ was the desirability a participant i would hold for a candidate j, which was a weighted sum of the alignments of participants' positions ($stance_{i,\ issue\ k}$, from -3 to 3) with candidates' positions ($stance_{j,\ issue\ k}$, from -3 to 3) on the two presented issues. The smaller the absolute difference between the two, the larger the alignments yielded and the higher the desirability a participant had toward a candidate. The weights reflected how important (rescaled to the range of 0 to 6) the issues were to that participant. Appropriate scaling factors were applied so that the desirability eventually ranged from 0 to 10.

Survey Questions

In Studies 1 and 2, we asked participants about their party affiliations and demographics after they completed the voting task. For the party affiliation question, we adopted from Jenke and Huettel's work (2020)[30], "Generally speaking, in politics do you consider yourself as:" Response options ranged from "-3: Strong Democrat", "0: Independent," to "3: Strong Republican." For the demographic questions, we asked (1) Gender, (2) Age, (3) Race, (4) Race: Hispanic or Latinx, (5) Education years, (6) their biological mother's education level, (7) their biological father's education level.

In Study 3, we asked participants a poll question about their voting intentions toward the 2024 US presidential candidates. Participants assigned to the Select (Reject) condition were asked: "At this time point, who would you be most inclined to vote for (against) in the upcoming US general elections?" They were presented with four options: (a) I would vote for (against) Joe Biden, (b) I would vote for (against) Donald Trump, (c) I'm undecided, (d) Prefer not to respond. After the poll question, participants were asked about their eligibility to vote: "Are you eligible to vote in the upcoming US general elections?" They were presented with four options: (a) Yes, (b) No, (c) Not sure, (d) Prefer not to respond.

Participants were then asked about (1) Likelihood of voting (from -3 to 3) in the upcoming election, (2) Favorability (from 0 to 100) toward Joe Biden or Donald Trump, (3) Trust toward Joe Biden or Donald Trump (from -3 to 3) on six policy issues: The Economy, Foreign Policy, Immigration Policy, Health Insurance, Gun Buying, and Abortion. See Table S4 for descriptive statistics of each question. Finally, we included questions about participants' party affiliations and demographics, which were the same as in Studies 1 and 2 (See Table S3). See the preregistration (https://osf.io/djy4h) for all the wording of questions and options.

Statistical Analysis

Data Preprocessing

In Studies 1 and 2, we centered and scaled each ballot's overall desirability, relative desirability, and trial order (1st to the 100th ballot) with respect to each participant before feeding them to the regression models. A ballot's overall desirability was defined as the mean desirability of the two candidates; the relative desirability was the difference between the desirability of two candidates (signed if denoted as "X vs. Y"; unsigned otherwise).

When analyzing candidate choices (i.e., when participants opted to vote), we excluded both ballots on which participants decided to opt out of voting and ballots on which participants spent too long on the ballot and hit an implicit deadline (2 minutes; see Voting Task). When analyzing opt-outs, we regarded those ballots on which participants spent too long and hit the deadline as not abstaining. For both Studies 1 and 2, decision time (choice RT) was defined as the time participants spent after seeing the two candidates on the screen until they chose one candidate by pressing the Left or Right button. We log-transformed (with 10 as the base) choice RTs before feeding them to the regression models.

Statistical Analysis

The results of all regression models are summarized in Tables S7-S15.

Study 1

We used generalized linear mixed-effect regression (R package lme4[31]) to analyze candidate choices for those ballots when participants opted to vote. For both Select and Reject conditions, we ran regressions using the dependent variable of whether the left candidate was chosen (chosen: 1; unchosen: 0) and included the relative desirability (the desirability of the left candidate minus that of the right candidate), overall desirability, trial order, and the interaction between the trial order and the relative/overall desirability, with random (participant-specific) intercept and slopes for each predictor. We also ran linear mixed-effect regression to analyze choice RT (log-transformed) using the same predictors above and the random (participant-specific) intercept and slopes of all the predictors. Finally, we ran generalized linear mixed-effect models to analyze opt-out decisions (opt-out: 1; not opt-out: 0) using the sample predictors and random structures. All the reported models converged well (relative maximum gradient < 0.001).

We ran three additional regression models (candidate choices, choice RTs, and opt-out decisions) for each study, combining participants in both conditions to report the interaction effect (Table S11, S12, and S15). Those regressions included the choice condition (Select: -1, Reject: 1), overall desirability, relative desirability, trial order, and the interaction between the choice condition and overall/relative desirability, the trial order and overall/relative desirability, and the three-way interactions (choice condition x trial order x overall/relative desirability) with random (participant-specific) intercept and slopes for each predictor. All the reported models converged well (relative maximum gradient < 0.003).

Study 2

We used the same setup of regression models and predictors as in Study 1. All the reported models converged well (relative maximum gradient < 0.001), except for the model of candidate choices in the Reject group (relative maximum gradient = 0.066). To get a better convergence of the model, we reduced the full random structure by removing the random effect of the interaction between relative desirability and trial order (relative maximum gradient < 0.001). The estimated main effects of relative desirability and trial order had negligible changes from the full random-structure model.

Study 3

Our primary, pre-registered prediction was that eligible voters in the Reject condition were more likely to vote (less likely to opt-out) than those in the Select condition. To test this, we coded participants who responded "I'm undecided" or "Prefer not to respond" as uncommitted voters and conducted a two-proportion, one-tailed z-test to compare the proportions of uncommitted voters in two conditions. We used the standard $p < .05$ for this test. To reduce noise, we further excluded uncommitted voters who chose "Prefer not to respond" in both conditions and conducted another two-proportional one-tailed z-test. We used stricter criteria, alpha = .025, for this test. The p-value for the second test was reported in the main text, and the detailed results for the two tests are included in Table S16.

Simulations

A Voting Agent

We used the regression models of candidate choices and opt-out decisions fitted by our choice data in Studies 1 and 2 (see Statistical Analysis; Figure 4 and S5) to simulate agents that could either vote according to different goals or opt out. We used the models that only included the fixed effects to simulate a voting agent without idiosyncratic behaviors biased toward any individual participant. We simulated candidate choices (which candidate was chosen) and opt-outs (whether the vote was cast) in response to 81 distinct candidate pairs (9 x 9, desirability from 1 to 9 out of 10 points for each candidate) in both Select and Reject conditions. The same preprocessing (centering and scaling) was performed, with the mean and variance of predictors (overall and relative desirability) averaged across all participants as centers and scaling factors, respectively. The trial order was set as 1, simulating that the voting agent only has one ballot to

vote on. The model outputs were the probabilities of choosing each candidate when votes were cast and the probabilities of opt-out.

Elections

With our voting agent models, we simulated projected electoral outcomes by setting up two populations of voters with their preferences for the two candidates distinct from each other. The Blue Voter preferred the Blue Candidate over the Red Candidate (with the corresponding candidate desirability 4 versus 1), while the Red Voter preferred the Red Candidate over the Blue Candidate (with the desirability 6 versus 3). We simulated four elections, with each having 10000 voters in total, and set up four proportions of Blue versus Red Voters: (Blue, Red) = (500, 9500), (3500, 6500), (6500, 3500), (9500, 500). The projected electoral outcomes were the difference between the actual votes for the two candidates. For selection-based voting, the actual votes for the Blue Candidate would be the product of (1) the probability of not opting out, (2) the probability of selecting the Blue Candidate, and (3) the number of votes from both the Blue and Red Voters; for rejection-based voting, the votes to reject the Blue Candidate would be counted as the votes for the Red Candidate, calculated as a product of (1) the probability of not opting out, (2) the probability of rejecting the Blue Candidate, and (3)the number of votes from both the Blue and Red Voters.

Supplementary Text

A. Negative campaigning

To compare the effect of negative campaigning with that of rejection-based voting, we used our voting agent model (Study 2) to simulate voters moderately preferring Candidate A over Candidate B by 1 point (desirability 4 versus 3). We then assumed that negative campaigning on Candidate B could ideally decrease voters' preferences by 2 points (desirability 4 versus 1). We show (Table S17) that even though the actual votes for Candidate A versus Candidate B increased (from 9 % to 16 %), it was because voters were less likely to vote for Candidate B (from 8 % to 1 %), but not more votes would be cast for Candidate A. In contrast, rejection-based voting considerably increased actual votes for Candidate A (from 18 % to 59 %), leading to overall higher actual votes for A versus B (from 9 % to 34 %).

B. Controlling for variability in demographics

All three studies employed random assignment to conditions (selection-based and rejection-based voting) to ensure that participant samples were matched for demographic and other individual-level variables. To confirm that this randomization was successful, we tested for differences in demographic variables across conditions. As expected, we found that almost all of the demographic variables collected were similarly distributed across the two groups in all three studies ($p > 0.07$; Tables S1, S2, and S3). The only exceptions to this were differences in the mother's average education level in Study 1 ($p = 0.02$) and gender in Study 2 ($p = 0.04$). While these effects on their own would not withstand correction for multiple comparisons across all demographic variables, as an additional conservative step, we performed two additional

generalized mixed-effect regression models predicting opt-out behavior based on experimentally manipulated variables, while controlling for these two demographic variables in Studies 1 and 2, respectively (Table S18 and S19). We did not find the effects of these demographic variables on opt-out decisions ($p > 0.34$), and accordingly, all of our main findings remained qualitatively unchanged when controlling for these.

Supplementary Figures

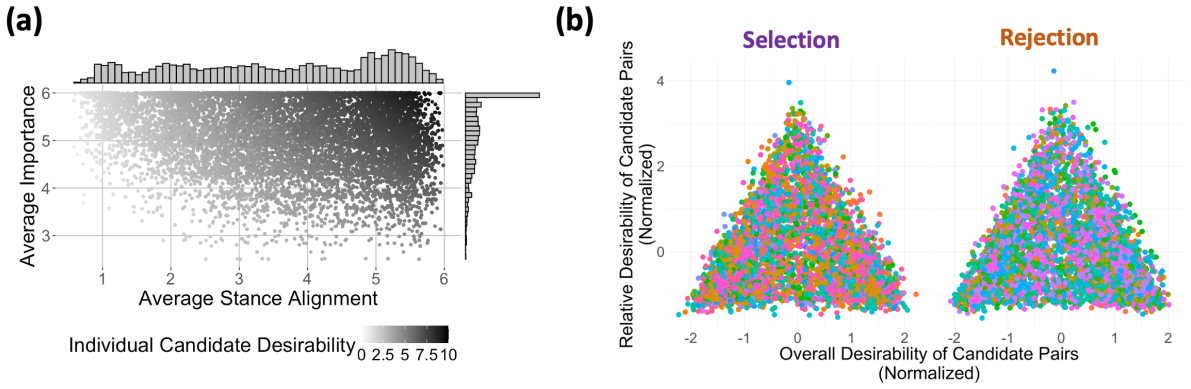

Figure S1. Systematic Manipulations of Desirability of Candidates and Ballots. a. We synthesized a wide array of candidates who each held stances on two out of thirteen issues that had been rated by a given participant (see Figure 1a). We estimated the desirability of each candidate (white-black gradient) based on how aligned the candidates' stances were with the participants' stances on those issues (x-axis, shown as averages for visualization), weighed by how important those issues were to the participant (y-axis). The scatterplot shows desirability for all candidates shown across all participants in Study 1. **b.** We paired candidates across ballots to systematically vary their overall desirability (how desirable the two candidates were on average; x-axis) and relative desirability (how one candidate was more desirable than the other; y-axis). Scatterplots show the overall and relative desirability of all ballots shown across all participants, with each color reflecting a different participant (Left: Selection; Right: Rejection), demonstrating that these distributions highly overlapped as intended.

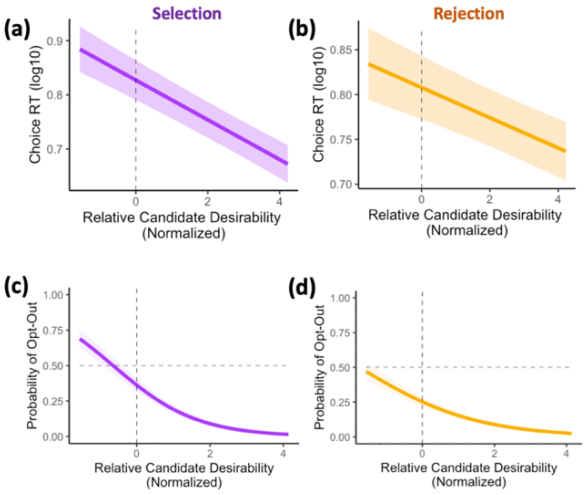

Figure S2. Participants were faster to choose between the candidates and less likely to opt out as the difference in desirability between the candidates increased (Study 1). Participants were faster to select the better candidate (**a**) or reject the worse candidate (**b**), and less likely to be out of voting in both cases (**c**-**d**) when one of the candidates was much more desirable than the other (i.e. higher relative desirability). Critically, this effect was independent of the overall desirability in each of these cases, and it was covaried out in relevant analyses (see Figure S3). These patterns were replicated in Study 2 (not shown).

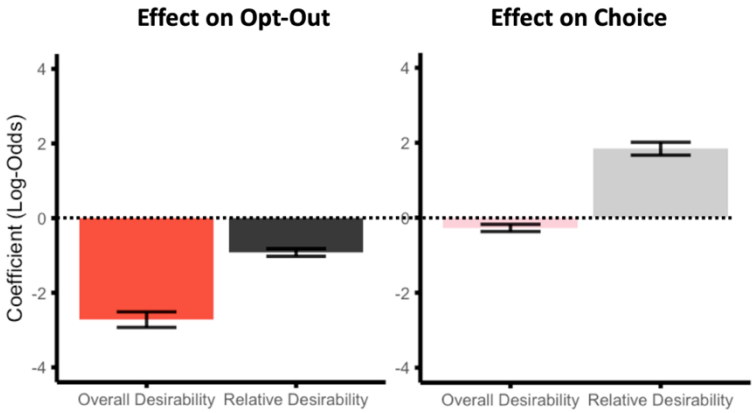

Figure S3. Double dissociation in the influence of overall vs. relative desirability on decisions regarding whether to opt out vs. which candidate to select (Study 1). Left: The likelihood of a participant opting out of voting on a given ballot in the Select condition (higher values on the y-axis) was primarily determined by the overall (un-)desirability of candidates and, to a lesser extent, by their relative desirability. **Right:** When participants chose to vote, the likelihood that a participant chose the more desirable candidate (higher values on the y-axis) was primarily determined by the relative desirability of the two candidates and not by overall desirability. This plot was generated from a model of candidate choice accuracy (whether the more desirable candidate is chosen; Table S20) using unsigned relative desirability to be compared with the model of opt-out decisions (**Left**, Table S13). These patterns were replicated in Study 2 (not shown).

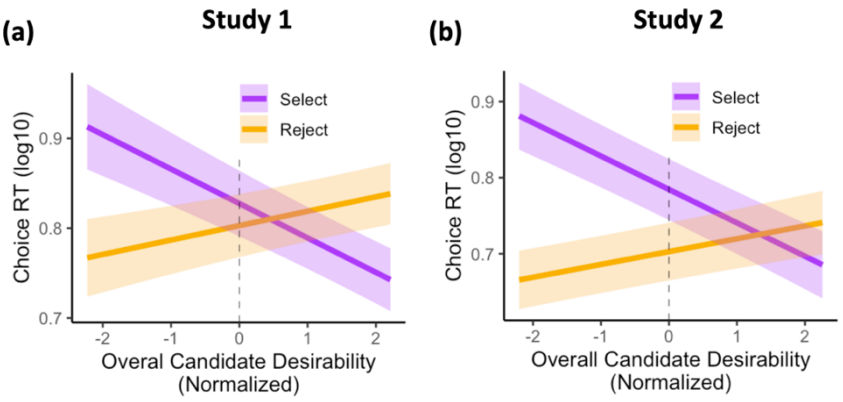

Figure S4. Candidate choices were the fastest when selecting the better of two good candidates or rejecting the lesser of two bad candidates. Across Studies 1 (**a**) and 2 (**b**), response times (choice RTs) for candidate choices were negatively correlated with overall candidate desirability for the Select condition (purple lines) and positively correlated with overall candidate desirability in the Reject condition (orange lines).

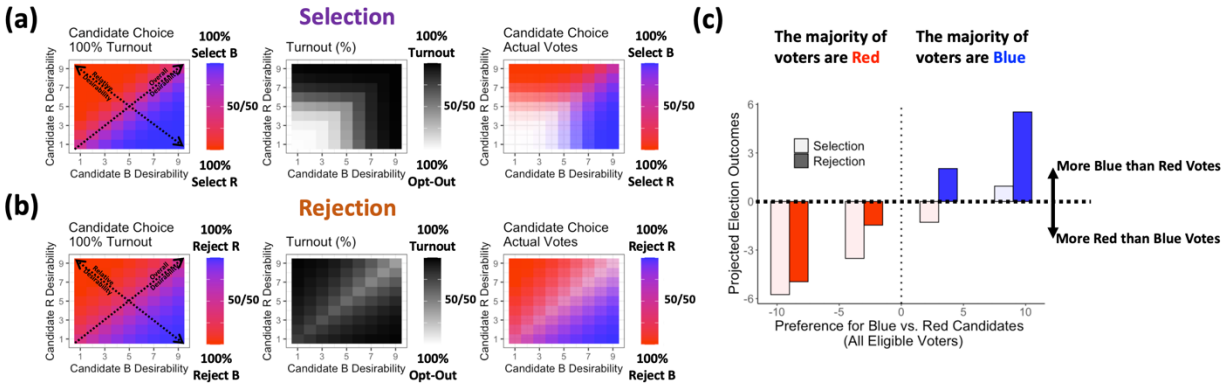

Figure S5. Simulations of selection- and rejection-based elections based on choice data from Study 1. Here we show the results of the same simulations as shown in Figure 4 (which was based on Study 2) using data from Study 1 participants. All findings replicate when using this alternate dataset (compare Panels **a-c** with Fig. 4a, 4b, and 4d).

Supplementary Tables

Table S1. Demographics of Study 1 (p-value: Wilcox rank sum tests)

Demographics	Selection (N = 44)	Rejection (N = 47)	Difference?
Gender	F/M = 19/25	F/M = 28/19	p = 0.14
Age	Mean = 37.0 (SD = 9.31)	Mean = 37.3 (SD = 9.79)	p = 0.90
Party Affiliation	Mean = -0.63 (SD = 2.11) (N = 43)	Mean = -0.80 (SD = 1.82) (N = 46)	p = 0.85
Race	Asian = 7 Black/African = 9 Caucasian = 20 Hispanic/Latinx = 1 Native American = 0 Mixed = 6 Other = 1	Asian = 4 Black/African = 8 Caucasian = 23 Hispanic/Latinx = 4 Native American = 1 Mixed = 7 Other = 0	p = 0.63
Hispanic/Latinx	Yes/No = 2/42	Yes/No = 8/39	p = 0.09
Education (years)	Mean = 15.8 (SD = 2.12)	Mean = 14.9 (SD = 2.81) (N = 46)	p = 0.08
Education: Mother[1]	Mean = -0.17 (SD = 1.76) (N = 43)	Mean = 0.70 (SD = 1.51) (N = 46)	**p = 0.02***
Education: Father[1]	Mean = -0.20 (SD = 1.64) (N = 43)	Mean = 0.39 (SD = 1.71) (N = 45)	p = 0.13

[1] Response options included 6 education levels (see https://osf.io/djy4h), which were coded as -2.5, -1.5, -0.5, 0.5, 1.5, and 2.5.

Table S2. Demographics of Study 2 (p-value: Wilcox rank sum tests)

Demographics	Selection (N = 39)	Rejection (N = 43)	Difference?
Gender	F/M/Prefer not to respond = 14/23/2	F/M = 25/18	**p = 0.04***
Age	Mean = 33.9 (SD = 9.30)	Mean = 33.6 (SD = 9.84)	p = 0.75
Party Affiliation	Mean = -0.95 (SD = 1.96)	Mean = -1.42 (SD = 1.68)	p = 0.35
Race	Asian = 2 Black/African = 11 Caucasian = 21 Hispanic/Latinx = 3 Native American = 0 Mixed = 2 Other = 0	Asian = 7 Black/African = 9 Caucasian = 18 Hispanic/Latinx = 3 Native American = 0 Mixed = 6 Other = 0	p = 0.30
Hispanic/Latinx	Yes/No = 5/34	Yes/No = 6/37	p = 1.00
Education (years)	Mean = 15.1 (SD = 2.65)	Mean = 15.1 (SD = 2.22)	p = 0.69
Education: Mother	Mean = -0.14 (SD = 1.60)	Mean = 0.36 (SD = 1.57)	p = 0.13
Education: Father	Mean = -0.37 (SD = 1.84)	Mean = 0.17 (SD = 1.68) (N = 42)	p = 0.15

Table S3. Demographics of Study 3 (p-value: Wilcox rank sum tests)

Demographics	Selection (N = 484)	Rejection (N = 483)	Difference?
Gender	F/M/Prefer not to respond = 251/230/3	F/M/Prefer not to respond = 237/242/4	p = 0.68
Age	Mean = 35.6 (SD = 9.30) (N = 483)	Mean = 34.9 (SD = 9.30)	p = 0.27
Party Affiliation	Mean = -0.18 (SD = 0.89) (N = 482)	Mean = -0.18 (SD = 0.90) (N = 482)	p = 0.95
Race	Asian = 39 Black/African = 45 Caucasian = 307 Hispanic/Latinx = 35 Native American = 8 Mixed = 49 Pacific Islander = 0 Other = 1	Asian = 27 Black/African = 53 Caucasian = 322 Hispanic/Latinx = 24 Native American = 2 Mixed = 49 Pacific Islander = 1 Other = 5	p = 0.08
Hispanic/Latinx	Yes/No/Prefer not to respond = 68/414/2	Yes/No/Prefer not to respond = 48/434/1	p = 0.09
Education (years)[2]	Mean = 15.2 (SD = 2.26)	Mean = 15.1 (SD = 2.33) (N = 482)	p = 0.53
Education: Mother	Mean = 0.16 (SD = 1.61) (N = 474)	Mean = 0.05 (SD = 1.61) (N = 478)	p = 0.29
Education: Father	Mean = 0.12 (SD = 1.70) (N = 459)	Mean = 0.05 (SD = 1.65) (N = 463)	p = 0.39

[2]2 participants responded “less than 9”, which was coded as 8.

Table S4. Other political measures in Study 3 (p-value: Wilcox rank sum tests)

Measures	Selection (N = 484)	Rejection (N = 483)	Difference?
Likelihood of Voting	Mean = 1.76 (SD = 1.72)	Mean = 1.60 (SD = 1.87)	p = 0.36
Favorability: Biden	Mean = 35.5 (SD = 30.0)	Mean = 33.4 (SD = 29.5)	p = 0.35
Trust, Biden: Economy	Mean = -0.63 (SD = 1.97)	Mean = -0.92 (SD = 1.97) (N = 482)	**p = 0.02***
Trust, Biden: Foreign Policy	Mean = -0.75 (SD = 1.95)	Mean = -0.95 (SD = 1.94) (N = 481)	p = 0.11
Trust, Biden: Immigration Policy	Mean = -0.81 (SD = 1.89) (N = 483)	Mean = -0.88 (SD = 1.92) (N = 482)	p = 0.55
Trust, Biden: Health Insurance	Mean = -0.19 (SD = 1.93)	Mean = -0.26 (SD = 1.87) (N = 481)	p = 0.56
Trust, Biden: Gun Buying	Mean = -0.46 (SD = 1.86) (N = 483)	Mean = -0.65 (SD = 1.92) (N = 480)	p = 0.11
Trust, Biden: Abortion	Mean = 0.30 (SD = 2.02) (N = 475)	Mean = 0.12 (SD = 2.07) (N = 479)	p = 0.22
Favorability: Trump	Mean = 24.4 (SD = 30.8)	Mean = 22.2 (SD = 29.1)	p = 0.67
Trust, Trump: Economy	Mean = -0.12 (SD = 2.18)	Mean = -0.30 (SD = 2.17) (N = 482)	p = 0.21
Trust, Trump: Foreign Policy	Mean = -0.85 (SD = 2.15)	Mean = -0.96 (SD = 2.15) (N = 482)	p = 0.42
Trust, Trump: Immigration Policy	Mean = -0.62 (SD = 2.37)	Mean = -0.70 (SD = 2.35)	p = 0.63
Trust, Trump: Health Insurance	Mean = -1.24 (SD = 1.79) (N = 483)	Mean = -1.38 (SD = 1.75) (N = 482)	p = 0.20
Trust, Trump: Gun Buying	Mean = -0.77 (SD = 2.08) (N = 483)	Mean = -0.72 (SD = 2.13) (N = 479)	p = 0.86
Trust, Trump: Abortion	Mean = -1.40 (SD = 1.84) (N = 479)	Mean = -1.46 (SD = 1.88) (N = 479)	p = 0.42

Table S5. List of political issue questions used in Studies 1 and 2. We asked two questions for each issue: "Indicate your stance on [issue name (text)] using the sliding scale below the question. -3 indicates [Description for "-3" (text)] and 3 indicates [Description for "3" (text)]"; "How important is this issue to you (from -3: Not important at all to 3: Very important)?"

issue name (text)	**Description for "-3" (text)**	**Description for "3" (text)**
economy	government involvement in economy should definitely decrease (closer to a free market) than it is now	government involvement in economy should definitely increase (closer to a big government) than it is now
taxation	taxes on the wealthy should definitely decrease	taxes on the wealthy should definitely increase.
foreign policy	the U.S. should be less involved abroad than it is now	the U.S. should be more involved abroad than it is now.
health care	government insurance plans should dominate	private insurance plans should dominate
immigration	government should make it harder (more restrictions) for immigrants to come live in the States	government should make it easier (less restrictions) for immigrants to come live in the States.
gun policy	the government should make it harder than it is now to buy a gun	the government should make it easier than it is now to buy a gun
social security	spending on social security should definitely decrease	spending on social security should definitely increase
education	spending on education should definitely decrease	spending on education should definitely increase
Supreme Court appointment	should definitely appoint liberal judges	should definitely appoint conservative judges
police forces	the federal government should definitely decrease regulations on local police forces	the federal government should definitely increase regulations on local police forces
environment	government should not regulate business to protect the environment	government should regulate business to protect the environment
abortion	legally allow abortions in all circumstances	outlaw abortions in all circumstances
LGBTQ+	definitely support protecting members of the LGBTQ+ community from discrimination	definitely oppose protecting members of the LGBTQ+ community from discrimination

Table S6. List of political issue scales used in Studies 1 and 2. Below each question, participants saw a sliding scale on which they indicated their answers. Below are those texts on the scales and the summary statistics of stance and importance ratings for each issue. We combined the ratings from Studies 1 and 2 participants (N = 173) who performed the voting tasks in March 2024. (p-value: Wilcox signed rank tests, H = 0)

issue name (scale)	Description for "-3" (scale)	Description for "3" (scale)	Stance Ratings: Mean (SD, p-value)	Importance Ratings: Mean (SD, p-value)
Government Involvement in Economy	Decrease	Increase	0.73 (1.53, p < 0.001)	1.08 (1.29, p < 0.001)
Taxation on the Wealthy	Decrease	Increase	2.00 (1.32, p < 0.001)	1.38 (1.42, p < 0.001)
US Foreign Involvement	Less	More	-0.63 (1.53, p < 0.001)	0.58 (1.52, p < 0.001)
Health Insurance	Government	Private	-1.16 (1.78, p < 0.001)	1.70 (1.36, p < 0.001)
Immigration to the US	Harder	Easier	0.13 (1.79, p = 0.438)	1.03 (1.42, p < 0.001)
Gun Buying	Harder	Easier	-1.83 (1.55, p < 0.001)	1.61 (1.47, p < 0.001)
Spending on Social Security	Decrease	Increase	1.30 (1.36, p < 0.001)	1.05 (1.39, p < 0.001)
Spending on Education	Decrease	Increase	1.93 (1.27, p < 0.001)	1.66 (1.29, p < 0.001)
Supreme Court Judges	Liberal	Conservative	-0.94 (1.78, p < 0.001)	1.49 (1.41, p < 0.001)
Government Regulating Local Police Forces	Decrease	Increase	1.16 (1.47, p < 0.001)	1.06 (1.32, p < 0.001)
Regulating Business Impact on the Environment	No	Yes	1.75 (1.32, p < 0.001)	1.44 (1.31, p < 0.001)
Abortion	Legal	Illegal	-1.62 (2.00, p < 0.001)	1.83 (1.43, p < 0.001)
Protecting LGBTQ+ from Discrimination	Support	Oppose	-1.67 (1.88, p < 0.001)	1.02 (2.00, p < 0.001)

Table S7. Fix-effect coefficients: models of candidate choices in the Select groups

Left is Chosen (Left: 1; Right: 0)	Study 1		Study 2	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	0.09	[-0.12, 0.29] 0.421	0.06	[-0.12, 0.24] 0.518
Relative Desirability (Left vs. Right)	**2.75**	**[2.36, 3.14] <.001**	**2.22**	**[1.90, 2.55] <.001**
Overall Desirability	0.05	[-0.11, 0.22] 0.511	-0.09	[-0.24, 0.05] 0.210
Trial Order	-0.02	[-0.20, -0.17] 0.870	0.17	[-0.00, 0.35] 0.052
Relative Desirability (Left vs. Right) X Trial Order	0.04	[-0.20, 0.29] 0.725	0.07	[-0.13, 0.28] 0.473
Overall Desirability X Trial Order	0.03	[-0.13, 0.18] 0.712	-0.13	[-0.28, 0.01] 0.078

Table S8. Fix-effect coefficients: models of candidate choice RTs in the Select groups

Log10 (candidate choice RT)	Study 1		Study 2	
	Beta	CI (p-value)	Beta	CI (p-value)
Intercept	**0.83**	**[0.77, 0.90] < .001**	**0.79**	**[0.74, 0.84] <.001**
Relative Desirability	**-0.04**	**[-0.05, -0.02] <.001**	**-0.03**	**[-0.04, -0.02] <.001**
Overall Desirability	**-0.04**	**[-0.06, -0.02] <.001**	**-0.05**	**[-0.06, -0.03] <.001**
Trial Order	**-0.04**	**[-0.06, -0.02] <.001**	**-0.03**	**[-0.05, -0.02] <.001**
Relative Desirability X Trial Order	-0.00	[-0.01, 0.01] 0.424	-0.00	[-0.01, 0.01] 0.462
Overall Desirability X Trial Order	-0.00	[-0.02, 0.01] 0.492	**-0.02**	**[-0.03, -0.00] 0.014**

Table S9. Fix-effect coefficients: models of candidate choices in the Reject groups

Left is Chosen (Left: 1; Right: 0)	Study 1		Study 2	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	0.02	[-0.11, 0.14] 0.807	0.01	[-0.10, 0.12] 0.868
Relative Desirability (Left vs. Right)	**-1.67**	**[-1.97, -1.38] <.001**	**-1.85**	**[-2.14, -1.56] <.001**
Overall Desirability	-0.06	[-0.17, 0.05] 0.281	-0.03	[-0.12, 0.07] 0.566
Trial Order	**-0.12**	**[-0.23, -0.00] 0.042**	0.06	[-0.03, 0.16] 0.162
Relative Desirability (Left vs. Right) X Trial Order	**-0.17**	**[-0.32, -0.01] 0.034**	0.04	[-0.07, 0.15] 0.485
Overall Desirability X Trial Order	0.02	[-0.08, 0.12] 0.749	0.04	[-0.05, 0.13] 0.359

Table S10. Fix-effect coefficients: models of candidate choice RTs in the Reject groups

Log10 (candidate choice RT)	Study 1		Study 2	
	Beta	CI (p-value)	Beta	CI (p-value)
Intercept	**0.80**	**[0.73, 0.88] < .001**	**0.70**	**[0.61, 0.80] <.001**
Relative Desirability	**-0.02**	**[-0.03, -0.00] 0.006**	**-0.02**	**[-0.03, -0.01] 0.003**
Overall Desirability	**0.02**	**[0.00, 0.03] 0.039**	**0.02**	**[0.01, 0.03] 0.005**
Trial Order	**-0.06**	**[-0.08, -0.04] <.001**	**-0.05**	**[-0.07, -0.03] <.001**
Relative Desirability X Trial Order	0.01	[-0.00, 0.02] 0.058	0.00	[-0.01, 0.01] 0.850
Overall Desirability X Trial Order	0.00	[-0.01, 0.01] 0.957	-0.01	[-0.02, 0.01] 0.258

Table S11. Fix-effect coefficients: models of candidate choices in both groups

Left is Chosen (Left: 1; Right: 0)	Study 1		Study 2	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	0.06	[-0.05, 0.17] 0.269	0.01	[-0.09, 0.11] 0.825
Task (-1: Select; 1: Reject)	-0.03	[-0.15, 0.08] 0.597	-0.02	[-0.13, 0.08] 0.668
Relative Desirability (Left vs. Right)	**0.50**	**[0.27, 0.73] <.001**	0.19	[-0.03, 0.40] 0.089
Overall Desirability	0.01	[-0.08, 0.10] 0.852	-0.07	[-0.15, 0.02] 0.109
Trial Order	-0.05	[-0.14, 0.05] 0.334	0.08	[-0.01, 0.16] 0.082
Relative Desirability (Left vs. Right) X Trial Order	0.02	[-0.09, 0.14] 0.673	0.06	[-0.05, 0.16] 0.275
Overall Desirability X Trial Order	0.01	[-0.08, 0.09] 0.906	-0.02	[-0.10, 0.06] 0.565
Task (-1: Select; 1: Reject) X Relative Desirability (Left vs. Right)	**-2.19**	**[-2.43, -1.95] <.001**	**-2.05**	**[-2.27, -1.82] <.001**
Task (-1: Select; 1: Reject) X Overall Desirability	-0.05	[-0.15, 0.04] 0.264	0.02	[-0.07, 0.10] 0.653
Task (-1: Select; 1: Reject) X Trial Order	-0.07	[-0.17, 0.03] 0.180	-0.03	[-0.12, 0.06] 0.526
Task (-1: Select; 1: Reject) X Relative Desirability (Left vs. Right) X Trial Order	-0.13	[-0.27, 0.01] 0.060	0.01	[-0.11, 0.14] 0.828
Task (-1: Select; 1: Reject) X Overall Desirability X Trial Order	0.00	[-0.08, 0.09] 0.939	0.06	[-0.02, 0.14] 0.142

Table S12. Fix-effect coefficients: models of candidate choice RTs in both groups

Log10 (candidate choice RT)	Study 1		Study 2	
	Beta	CI (p-value)	Beta	CI (p-value)
Intercept	**0.82**	**[0.77, 0.87] <.001**	**0.75**	**[0.69, 0.80] <.001**
Task (-1: Select; 1: Reject)	-0.01	[-0.06, 0.04] 0.586	-0.04	[-0.10, 0.01] 0.132
Relative Desirability	**-0.03**	**[-0.04, -0.02] <.001**	**-0.02**	**[-0.03, -0.02] <.001**
Overall Desirability	-0.01	[-0.02, 0.00] 0.058	**-0.01**	**[-0.02, -0.00] 0.006**
Trial Order	**-0.05**	**[-0.06, -0.03] <.001**	**-0.04**	**[-0.05, -0.03] <.001**
Relative Desirability X Trial Order	0.00	[-0.00, 0.01] 0.503	-0.00	[-0.01, 0.00] 0.512
Overall Desirability X Trial Order	-0.00	[-0.01, 0.01] 0.588	**-0.01**	**[-0.02, -0.00] 0.006**
Task (-1: Select; 1: Reject) X Relative Desirability	**0.01**	**[0.00, 0.02] 0.022**	0.01	[-0.00, 0.01] 0.143
Task (-1: Select; 1: Reject) Overall Desirability	**0.03**	**[0.02, 0.04] <.001**	**0.03**	**[0.02, 0.04] <.001**
Task (-1: Select; 1: Reject) Trial Order	-0.01	[-0.02, 0.00] 0.214	-0.01	[-0.02, 0.00] 0.120
Task (-1: Select; 1: Reject) X Relative Desirability (Left vs. Right) X Trial Order	**0.01**	**[0.00, 0.01] 0.042**	0.00	[-0.00, 0.01] 0.443
Task (-1: Select; 1: Reject) X Overall Desirability X Trial Order	0.00	[-0.00, 0.01] 0.430	0.01	[-0.00, 0.02] 0.197

Table S13. Fix-effect coefficients: models of opt-out decisions in the Select groups

Opt-Out (Opt-Out: 1; Opt-to-Vote: 0)	Study 1		Study 2	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	**-0.53**	**[-0.97, -0.10] 0.016**	**-0.85**	**[-1.23, -0.46] <.001**
Relative Desirability	**-0.92**	**[-1.12, -0.72] <.001**	**-0.88**	**[-1.10, -0.65] <.001**
Overall Desirability	**-2.72**	**[-3.13, -2.31] <.001**	**-2.89**	**[-3.33, -2.46] <.001**
Trial Order	0.12	[-0.04, 0.28] 0.139	**0.25**	**[0.09, 0.41] 0.002**
Relative Desirability X Trial Order	-0.03	[-0.17, 0.11] 0.655	-0.00	[-0.16, 0.15] 0.967
Overall Desirability X Trial Order	-0.11	[-0.32, 0.10] 0.298	-0.07	[-0.31, 0.18] 0.588

Table S14. Fix-effect coefficients: models of opt-out decisions in the Reject groups

Opt-Out (Opt-Out: 1; Opt-to-Vote: 0)	Study 1		Study 2	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	**-1.10**	**[-1.41, -0.79] <.001**	**-1.83**	**[-2.20, -1.46] <.001**
Relative Desirability	**-0.63**	**[-0.81, -0.46] <.001**	**-0.63**	**[-0.80, -0.46] <.001**
Overall Desirability	**0.71**	**[0.19, 1.24] 0.008**	0.16	[-0.28, 0.60] 0.469
Trial Order	0.07	[-0.12, 0.25] 0.477	0.05	[-0.12, 0.22] 0.590
Relative Desirability X Trial Order	0.01	[-0.11, 0.13] 0.838	0.06	[-0.07, 0.19] 0.403
Overall Desirability X Trial Order	**0.19**	**[0.01, 0.36] 0.037**	0.10	[-0.06, 0.25] 0.217

Table S15. Fix-effect coefficients: models of opt-out decisions in both groups

Opt-Out (Opt-Out: 1; Opt-to-Vote: 0)	Study 1		Study 2	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	**-0.83**	**[-1.09, -0.56] <.001**	**-1.37**	**[-1.63, -1.10] <.001**
Task (-1: Select; 1: Reject)	-0.26	[-0.52, 0.00] 0.051	**-0.47**	**[-0.73, -0.21] <.001**
Relative Desirability	**-0.75**	**[-0.87, -0.62] <.001**	**-0.72**	**[-0.85, -0.58] <.001**
Overall Desirability	**-1.04**	**[-1.37, -0.71] <.001**	**-1.36**	**[-1.66, -1.06] <.001**
Trial Order	0.09	[-0.03, 0.21] 0.150	**0.15**	**[0.03, 0.27] 0.014**
Relative Desirability X Trial Order	-0.03	[-0.11, 0.05] 0.519	0.01	[-0.08, 0.10] 0.865
Overall Desirability X Trial Order	-0.06	[-0.18, 0.06] 0.354	-0.05	[-0.18, 0.08] 0.451
Task (-1: Select; 1: Reject) X Relative Desirability	**0.13**	**[0.00, 0.25] 0.045**	0.07	[-0.06, 0.20] 0.317
Task (-1: Select; 1: Reject) X Overall Desirability	**1.71**	**[1.38, 2.04] <.001**	**1.54**	**[1.24, 1.84] <.001**
Task (-1: Select; 1: Reject) X Trial Order	-0.01	[-0.13, 0.11] 0.819	-0.07	[-0.19, 0.04] 0.205
Task (-1: Select; 1: Reject) X Relative Desirability X Trial Order	0.05	[-0.03, 0.12] 0.221	0.04	[-0.04, 0.12] 0.358
Task (-1: Select; 1: Reject) X Overall Desirability X Trial Order	**0.23**	**[0.11, 0.35] <.001**	**0.14**	**[0.01, 0.26] 0.035**

Table S16. Proportions of uncommitted voters in Study 3

	Preregistered Prediction: Primary (Include "Prefer not to respond")		Preregistered Prediction: Secondary (Exclude "Prefer not to respond")	
Condition	Selection	Rejection	Selection	Rejection
Committed Voters	325	387	325	387
Uncommitted Voters	168	98	159	96
Proportions	0.341	0.202	0.329	0.199
Two-proportion test (one-tailed)	chi-square = 23.1 p <.001		chi-square = 20.3 p <.001	

Table S17. Simulations of negative campaigning

	Desirability: Candidate A	Desirability: Candidate B	Actual Votes for A (per 1 vote)	Actual Votes for B (per 1 vote)	Goal	Actual Votes for A (vs. B, per 1 vote)
Baseline	4	3	0.176	0.082	Selection	0.094
Negative Campaigning	4	1	0.172	0.012	Selection	0.159
Rejection-Based Voting	4	3	0.587	0.243	Rejection	0.344

Table S18. Controlling for variability in demographics: Study 1

Opt-Out (Opt-Out: 1; Opt-to-Vote: 0)	Study 1 (without Mother Education)		Study 1 (with Mother Education)	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	**-0.83**	**[-1.09, -0.56] <.001**	**-0.85**	**[-1.12, -0.59] <.001**
Mother Education			0.11	[-0.11, 0.33] 0.340
Task (-1: Select; 1: Reject)	-0.26	[-0.52, 0.00] 0.051	**-0.31**	**[-0.58, -0.03] 0.029**
Relative Desirability	**-0.75**	**[-0.87, -0.62] <.001**	**-0.75**	**[-0.88, -0.62] <.001**
Overall Desirability	**-1.04**	**[-1.37, -0.71] <.001**	**-1.02**	**[-1.35, -0.68] <.001**
Trial Order	0.09	[-0.03, 0.21] 0.150	0.09	[-0.03, 0.22] 0.135
Relative Desirability X Trial Order	-0.03	[-0.11, 0.05] 0.519	-0.04	[-0.12, 0.05] 0.402
Overall Desirability X Trial Order	-0.06	[-0.18, 0.06] 0.354	-0.06	[-0.18, 0.07] 0.368
Task (-1: Select; 1: Reject) X Relative Desirability	**0.13**	**[0.00, 0.25] 0.045**	0.12	[-0.01, 0.25] 0.064
Task (-1: Select; 1: Reject) X Overall Desirability	**1.71**	**[1.38, 2.04] <.001**	**1.74**	**[1.41, 2.07] <.001**
Task (-1: Select; 1: Reject) X Trial Order	-0.01	[-0.13, 0.11] 0.819	-0.02	[-0.15, 0.10] 0.695
Task (-1: Select; 1: Reject) X Relative Desirability X Trial Order	0.05	[-0.03, 0.12] 0.221	0.05	[-0.03, 0.13] 0.191
Task (-1: Select; 1: Reject) X Overall Desirability X Trial Order	**0.23**	**[0.11, 0.35] <.001**	**0.23**	**[0.11, 0.36] <.001**

Table S19. Controlling for variability in demographics: Study 2

Opt-Out (Opt-Out: 1; Opt-to-Vote: 0)	Study 2 (without Gender)		Study 2 (with Gender)	
	Log-Odds	CI (p-value)	Log-Odds	CI (p-value)
Intercept	**-1.37**	**[-1.63, -1.10] <.001**	**-1.14**	**[-1.70, -0.58] <.001**
Gender: Male vs. Female			-0.05	[-0.30, 0.19] 0.675
Gender: Prefer not to respond			0.25	[-0.29, 0.79] 0.364
Task (-1: Select; 1: Reject)	**-0.47**	**[-0.73, -0.21] <.001**	**-0.46**	**[-0.73, -0.19] 0.001**
Relative Desirability	**-0.72**	**[-0.85, -0.58] <.001**	**-0.72**	**[-0.85, -0.58] <.001**
Overall Desirability	**-1.36**	**[-1.66, -1.06] <.001**	**-1.36**	**[-1.67, -1.06] <.001**
Trial Order	**0.15**	**[0.03, 0.27] 0.014**	**0.15**	**[0.03, 0.27] 0.013**
Relative Desirability X Trial Order	0.01	[-0.08, 0.10] 0.865	0.01	[-0.08, 0.10] 0.875
Overall Desirability X Trial Order	-0.05	[-0.18, 0.08] 0.451	-0.05	[-0.17, 0.08] 0.458
Task (-1: Select; 1: Reject) X Relative Desirability	0.07	[-0.06, 0.20] 0.317	0.07	[-0.06, 0.20] 0.315
Task (-1: Select; 1: Reject) X Overall Desirability	**1.54**	**[1.24, 1.84] <.001**	**1.54**	**[1.24, 1.84] <.001**
Task (-1: Select; 1: Reject) X Trial Order	-0.07	[-0.19, 0.04] 0.205	-0.08	[-0.19, 0.04] 0.194
Task (-1: Select; 1: Reject) X Relative Desirability X Trial Order	0.04	[-0.04, 0.12] 0.358	0.04	[-0.04, 0.12] 0.356
Task (-1: Select; 1: Reject) X Overall Desirability X Trial Order	**0.14**	**[0.01, 0.26] 0.035**	**0.14**	**[0.01, 0.26] 0.033**

Table S20. Fix-effect coefficients: candidate choice accuracy in the Select group

Accuracy (More desirable is chosen: 1; otherwise: 0)	Study 1	
	Log-Odds	CI (p-value)
Intercept	**2.33**	**[1.94, 2.72] <.001**
Relative Desirability	**1.84**	**[1.50, 2.18] <.001**
Overall Desirability	**-0.27**	**[-0.46, -0.09] 0.004**
Trial Order	-0.05	[-0.30, 0.20] 0.695
Relative Desirability (Left vs. Right) X Trial Order	0.19	[-0.08, 0.47] 0.158
Overall Desirability X Trial Order	0.11	[-0.06, 0.28] 0.189

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