

Article

Does Party Polarization Affect the Electoral Prospects of a New Centrist Candidate? [†]

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Abstract: Does party polarization affect the electoral prospects of a new centrist candidate? The paper investigates this question in the context of a laboratory experiment where a centrist candidate is added to the race between a left candidate and a right candidate. The experimental design varies the polarization of the left and right candidates. The paper focuses on the effect of party polarization on the electoral prospects of a new centrist candidate through strategic voting behavior with experimental subjects acting as voters. The paper yields two main results: (1) party polarization initially improves the electoral prospects of a new centrist candidate; and (2) the effect of party polarization on the electoral prospects of the centrist weakens and ultimately disappears as elections are repeated. This happens because party polarization slows down the speed at which voters desert their candidate and vote strategically for the centrist in an apparent attempt at preventing the election of the candidate on the opposite side.

Keywords: polarization; strategic voting; centrist candidate; plurality voting; laboratory experiment

MSC: C72; D72



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1. Introduction

During the past decades, polarization has increased in several democracies around the world. It is undoubtedly true in the US. Since the late 1970s, the gap between Democrats and Republicans has been expanding [1,2]. Some scholars have assigned the origin of this rise in polarization to candidates and parties. As McCarty (2019; 4) [2] writes: "... the polarization we observe from the elites is probably not a reaction to changes among the electorate."¹ This raises the question of whether such an increase in polarization among established parties would make it easier for a new candidate to enter the middle and win the election.

To investigate this question, I ran a laboratory experiment in which a group of voters must elect a candidate. Elections are held under Plurality Voting: each voter can vote for one candidate, and the candidate who receives the most votes is elected. To capture the effect of party polarization on the electoral prospects of a new centrist candidate, I adopt an experimental design where there are initially two candidates running for election: one left and one right candidate. Treatments differ in the polarization of these two candidates. After several repetitions of this two-candidate election, an additional, third candidate is added in the middle.

The paper yields two main results. First, party polarization initially improves the electoral prospects of a new centrist candidate. Specifically, following his entry into the race, the centrist candidate receives more votes and is elected with a higher frequency when the left and right candidates are more polarized. Second, as elections are repeated, the electoral

prospects of a new centrist candidate become gradually independent of party polarization. This happens because, with experience, participants in the low-polarization treatment start deserting their candidate and strategically cast their vote for the centrist candidate in an apparent attempt at preventing the election of the candidate on the opposite side.

The result that party polarization improves the electoral prospects of the centrist candidate has two interesting applications.

One application concerns the Liberal Democratic party in Great Britain. The Lib Dems, as they are familiarly known, are centrists who are positioned between the Labour party on their left and the Conservative party on their right. Consistent with my experimental results, Nagel and Wlezien (2010) [7] find a positive relationship between the Lib Dems' vote share and the polarization of the Labour and Conservative parties over the period 1945–2005. In addition to confirming this empirical finding in a controlled setting, my experiment offers an alternative, possibly complementary, explanation for Nagel and Wlezien's empirical finding. The standard explanation is that polarization of the Labour and Conservative parties would have triggered an expansion of the Lib Dems' vote base, where a party's vote base is understood as the set of voters who prefer that party's policy position to the position of every other party. My experiment is designed such that party polarization does not affect parties' vote bases, meaning that this explanation does not apply. Instead, the explanation arising from the experiment is that polarization of the Labour and Conservative parties would have made the Lib Dems more focal, inducing some voters to desert their preferred party's candidate and strategically vote for the candidate of the Liberal Democratic party.

A second application concerns committee decision making. Think for example of a hiring committee that recruits for an 'any field' position. Suppose two candidates have been selected: a microeconomist and a macroeconomist. My result suggests that the more specialized these two candidates are, the easier it will be for a member of the committee to propose the recruitment of a compromise candidate, even though people in the department prefer the candidate in their field (micro or macro) to the compromise candidate.

The contribution of the paper is twofold. First, it confirms in a controlled setting the above-mentioned empirical finding that the electoral prospects of a centrist party are positively related to the polarization of the left and right parties. Second, as mentioned above, the paper proposes an explanation for this finding that differs from the standard explanation, which relies on party polarization triggering an expansion of the centrist party's vote base. The explanation that my paper provides is rather game-theoretic and relies on party polarization making a vote for the centrist focal, thereby inducing some leftists and rightists to desert their candidate and strategically vote for the centrist.

The remainder of the paper is organized as follows. The next section discusses the related literature. Section 3 describes the experimental design and Section 4 presents the results. Section 5 concludes. The appendix provides additional material.

2. Related Literature

The paper contributes to the literature on laboratory voting experiments. This literature can be organized around two themes: strategic voting and strategic candidacy. First, experiments on strategic voting have looked at vote coordination (e.g., Forsythe, Myerson, Rietz and Weber, 1993 [8]; Granic, 2017 [9]), information aggregation (e.g., Bouton, Llorente-Saguer and Malherbe, 2017 [10]) and voting behavior under alternative voting procedures (e.g., Forsythe, Myerson, Rietz and Weber, 1996 [11]; Van der Straeten, Laslier, Sauger and Blais, 2010 [12]; Dellis, D'Evelyn and Sherstyuk, 2011 [13]; Bassi, 2015 [14]). In contrast to the present paper, these contributions keep the set of candidates fixed and, therefore, cannot study how voters react to a new candidate's entry into the race. Second, experiments on strategic candidacy have looked at candidates' platform choices (e.g., Aragones and Palfrey, 2004 [15]) and candidates' decisions to enter the race (e.g., Cadigan, 2005 [16]; Tsakas and Xefteris, 2018 [17]; Grosser and Palfrey, 2019 [18]; Bol, Matakos, Troumpounis and Xefteris, 2019 [17]). In contrast to the present paper, these contributions assume sincere voting

behavior. The present paper contributes to this literature by studying strategic voting behavior following the entry of a new candidate in the race.²

The paper also contributes to the literature on models of political candidacy.³ Palfrey (1984) [21] and Weber (1992, 1997) [22,23] study platform choices in a Plurality Voting election where two established candidates face (a threat of) entry by a third candidate and where there is a continuum of sincere voters. They show that the two established candidates choose to polarize to deter entry on their flank and, in this way, avoid being squeezed between the entrant and the other established candidate. As in these contributions, the present paper studies the effect of candidate entry on the behavior of political actors. However, it uses a different methodology (laboratory experimentation instead of theoretical modeling) and studies the strategic reaction of voters instead of candidates. Other contributions in this literature study strategic candidacy decisions and their implications for the number of candidates and party polarization (e.g., Osborne, 1993 [24]; Osborne and Slivinski, 1996 [25]; Besley and Coate, 1997 [26]; Dellis, 2009 [27]; Dellis and Oak, 2016 [28]; Xefteris, 2016 [29]). The present paper adds to those contributions by looking at the relationship between candidate entry and party polarization, but in the other direction (i.e., the impact of party polarization on candidate entry instead of the impact of candidate entry on party polarization) and by using a different methodology (i.e., laboratory experimentation instead of theoretical modeling).

3. Experimental Design

A group of 11 participants acting as voters must elect a candidate to implement a policy such as a tax rate or the quantity of a public good.

There are five potential candidates, each of whom is committed to the policy he will implement if elected.⁴ Figure 1 reports the positions of the five potential candidates. They are distributed symmetrically around 10 and take values between 5 and 15. Specifically, there is a potential candidate at 10, whom I call the *centrist* (C). There are two potential *moderate* candidates: one at 7, whom I call the *left moderate* (LM), and another at 13, whom I call the *right moderate* (RM). Finally, there are two potential *extreme* candidates: one at 5, whom I call the *left extremist* (LE), and another at 15, whom I call the *right extremist* (RE). The set of candidates running in an election is determined exogenously and varies by treatment.

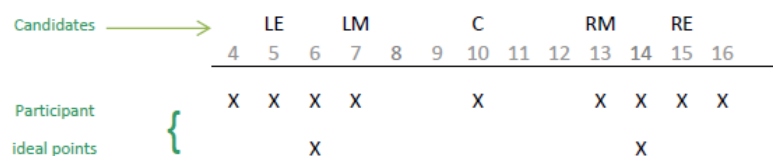


Figure 1. Voters' ideal points and candidates' positions.

Participants, whom I shall often refer to as voters, have single-peaked preferences over policies/candidates. Following van der Straeten et al. (2010) [12], I induce preferences such that voter i obtains from policy x a payoff of $20 - |x_i - x|$ dollars, where $|x_i - x|$ is the distance between policy x and voter i 's ideal point x_i . Crosses mark voters' ideal points in Figure 1. They are distributed symmetrically around 10 and take values between 4 and 16.⁵ I set voters' ideal policies such that any voter with an ideal point below (respectively, above) 10 prefers each left candidate (respectively, right candidate), moderate or extreme, to any other candidate. I call these five voters the *leftists* (respectively, *rightists*). The voter with ideal point 10 is the *median voter* and prefers the *centrist* C to any other candidate. I shall call this voter the *centrist voter*. Having a single *centrist voter* implies that the *centrist candidate* C needs to garner *leftists'* and *rightists'* votes to win the election.

Two treatments differ in the degree of polarization of the left and right candidates. In the moderate treatment, the running candidates on the left and right are the two moderate

candidates: *LM* and *RM*. In the extreme treatment, the running candidates on the left and right are the two extreme candidates: *LE* and *RE*.

There are two consecutive series of elections in every session, each series consisting of eight successive elections.⁶ All elections are held under Plurality Voting: participants can choose to vote for one candidate or abstain from voting. There is no cost of voting. The candidate who receives the most votes wins the election. Ties are broken equiprobably. In the first series of elections, only two candidates are running: *LM* and *RM* in the *moderate treatment*, and *LE* and *RE* in the *extreme treatment*. This first series of elections aims to generate a history of votes for the group and allows for participants' learning.⁷ In the second series of elections, the centrist *C* is added to the two candidates already running.⁸ This second series of elections aims to investigate the existence of a link between party polarization and the electoral prospects of a new centrist candidate. This will be completed by comparing participants' voting behavior and election outcomes in the two treatments. To isolate the effect of *party* polarization on the electoral prospects of a new centrist candidate, I keep the vote base of each candidate unchanged across treatments. Specifically, whether the polarization is high or low, every leftist (respectively, rightist) prefers the left candidate—moderate or extreme—to the centrist to the right candidate (respectively, the right candidate—moderate or extreme—to the centrist to the left candidate). Likewise, the voter at 10 prefers the centrist to the left and right candidates and is indifferent between the latter two.

The experimental design is between-subjects; that is, each participant goes through only one treatment. There are twelve experimental sessions, which are equally divided between the two treatments. Sessions were held in 2012 at the experimental economics laboratory of Université Laval in Quebec City. Each session has 22 participants, for a total of 264 participants. Participants were recruited via a mass email sent to the student population and staff members at the university.⁹ The 22 participants in a session were randomly assigned to two independent groups of eleven participants each and, within each group, to ideal points according to the distribution described in Figure 1. Within each group, candidates' policy positions and the distribution of voters' ideal points and payoffs (induced preferences) were common knowledge. However, the identity of the other participants in the group was unknown to a participant. To allow participants to develop voting strategies based on a shared history (Forstythe et al., 1993 [8]), the group and the ideal point of every participant in the group remained fixed throughout the session. Hence, there are twelve independent groups for each treatment.

Upon arrival, participants were randomly assigned to computer terminals. Once all participants were seated, we read aloud the instructions and presented a tutorial on the experimental software.¹⁰ Participants were invited to ask questions, after which the first series of eight two-candidates elections started. In each election, participants were presented first with a *vote screen*, inviting them to vote for one of the two candidates or to abstain from voting. Once all participants in the session had cast their vote, a *result screen* appeared, reporting each candidate's vote total in the group, the election winner, and the participant's payoff.¹¹ This allowed participants to learn from previous election outcomes. At the end of the first series of elections, a screen informed participants of the addition of a candidate. The second series of eight elections started, with three running candidates: the two candidates from the first series plus the centrist candidate. At the end of the session, one election was drawn randomly to determine each participant's gain for the whole session. Each participant's gain was equal to a 5 \$ show-up fee plus the payoff obtained in the randomly drawn election. Payments ranged from 14 \$ to 25 \$, with an average of 19.82 \$.

The following Figure 2 summarizes some of the information about the experiment.¹²

	Moderate Treatment	Extreme treatment
First series of 8 elections		
Periods	1-8	1-8
Candidates' positions	7 and 13 (LM and RM)	5 and 15 (LE and RE)
Second series of 8 elections		
Periods	9-16	9-16
Candidates' positions	7, 10 and 13 (LM, C and RM)	5, 10 and 15 (LE, C and RE)
Number of sessions	6	6
Number of (independent) groups per session	2	2
Total number of (independent) groups	12	12
Number of participants per session	22	22
Number of participants per group	11	11
Total number of participants	132	132

Figure 2. Experimental design.

4. Experimental Results

In this section, I show that, at his entry into the race, the centrist candidate has better electoral prospects in the extreme treatment than in the moderate treatment. I also show that the effect of party polarization on the electoral prospects of the centrist weakens after several repetitions of the election and ultimately disappears. The weakening and disappearance of this effect are associated with improved electoral prospects in the moderate treatment.

To make these observations, I report on election outcomes and participants' voting behavior in the second series of elections (periods 9 through 16). The data from those elections, aggregated by treatment, are presented in the main text. I use group averages as independent units of observation for statistical tests. All tests are (one-sided) Wilcoxon Mann–Whitney rank-sum tests. In addition, I sometimes pool the voting data from participants at symmetric positions (e.g., at 7 and 13, 6 and 14, and so on) as they tended to behave similarly (see Table A2 in the Appendix D).

Outcomes from the first series of elections (periods 1 through 8) appear in the appendix. Since there are only two running candidates in the first series of elections, each leftist voter (respectively, rightist voter) has, in the static game, a unique weakly dominant strategy, which is to vote for the left candidate (respectively, right candidate), independently of party polarization. Hence, we should not expect differences across treatments in the first series of elections. Indeed, no significant difference in election outcomes (candidates' vote shares, winning margins, and frequencies of ties) is found between the two treatments during the first series of elections. This justifies attributing to party polarization (and not to other differences that would have materialized in the first series of elections) the differences in the centrist's electoral prospects during the second series of elections.

4.1. Aggregate Election Outcomes

I first look at aggregate election outcomes.

I start with candidates' vote shares as a first way to examine party polarization's effect on the centrist candidate's electoral prospects. Figure 2 displays the evolution of candidates' average vote shares for each treatment. For the left and right candidates, I display the evolution of the highest (*Maximum Left-Right*) and lowest (*Minimum Left-Right*) of these two candidates' vote shares.¹³

At his entry in the race (period 9), the centrist candidate has, on average, a larger vote share in the extreme treatment (36.3%) than in the moderate treatment (25.3%). Moreover, in both treatments, the centrist's average vote share remains stable over the first four elections

of the series (periods 9 through 12). Table 1 reports that over these four elections, the centrist candidate received, on average, 37% of the votes in the extreme treatment compared to only 25.2% in the moderate treatment. This difference is statistically significant ($p = 0.049$ for a one-sided Wilcoxon Mann–Whitney rank-sum test with group averages over the four periods as observation units). Starting at the fifth election (period 13), the centrist's average vote share soars in the moderate treatment while remaining stable in the extreme treatment. These dynamics persist throughout the last four elections of the series (periods 13 through 16). Table 1 reports that over these four elections, the centrist candidate received, on average, 36.9% of the votes in the extreme treatment (compared to 37% during the first four elections) and 31.8% in the moderate treatment (compared to 25.2% during the first four elections). The difference between treatments is no longer statistically significant over the last four elections ($p = 0.217$).

Table 1. Candidates' vote shares.

		Centrist	Maximum Left-Right	Minimum Left-Right
All 8 periods	Extreme	37.0%	45.8%	17.2%
	Moderate	28.5%	44.7%	26.9%
	<i>p-value</i>	0.082	0.473	0.006
Periods 9–12	Extreme	37.0%	43.9%	19.1%
	Moderate	25.2%	45.4%	29.4%
	<i>p-value</i>	0.049	0.233	0.008
Periods 13–16	Extreme	36.9%	47.7%	15.4%
	Moderate	31.8%	43.9%	24.3%
	<i>p-value</i>	0.217	0.162	0.019

Furthermore, we can observe that in both treatments, participants tend to learn from previous election outcomes and strategically desert the candidate trailing among the left and right candidates.¹⁴ Indeed, the lowest vote share among the left and right candidates drops from an average of 23.7% in the extreme treatment (respectively, 30.8% in the moderate treatment) in period 9 to an average of 13.3% (respectively, 21.2%) in period 16. As noted above, in the moderate treatment, this desertion tends to benefit the centrist candidate, whose average vote share soars from 25.3% in period 9 to 34.8% in period 16 (while the average of the highest vote share among the left and right candidates remains at 43.9% in both periods 9 and 16). By contrast, in the extreme treatment, this desertion tends to benefit the one leading among the left and right candidates, with the highest vote share among the left and right candidates increasing from an average of 40% in period 9 to an average of 49% in period 16 (while the average vote share of the centrist remains stable around 37%).

As a second way to examine the effect of party polarization on the electoral prospects of the centrist candidate, I now look at the frequencies with which the centrist candidate obtains the highest, the second-highest, and the lowest vote share among the three candidates.¹⁵ Intuitively, the more often the centrist candidate ranks high in vote share, the better his electoral prospects are. Figure 3 displays for each treatment the evolution of the frequencies with which the centrist candidate obtains the highest (Top), second-highest (Second), and lowest (Last) vote share among the three candidates.

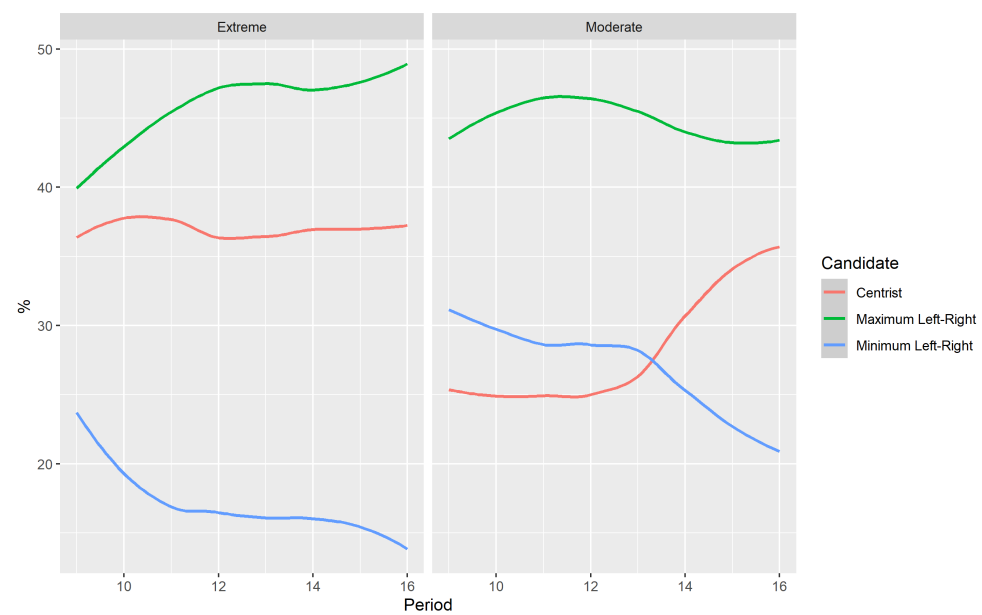


Figure 3. Candidates' vote shares.

At his entry in the race (period 9), the centrist candidate obtains the highest vote share (Top) amongst the three candidates much less often in the moderate treatment (8.3%) than in the extreme treatment (41.7%). At the same time, the centrist obtains the lowest vote share (Last) among the three candidates much more often in the moderate treatment (58.3%) than in the extreme treatment (25%). Table 2 reports that over the first four elections, the centrist candidate obtains the highest vote share in 45.8% of elections in the extreme treatment compared to only 14.6% in the moderate treatment. This difference is statistically significant ($p = 0.043$). Similarly, the centrist candidate obtains the lowest vote share in 56.2% of elections in the moderate treatment compared to 20.8% in the extreme treatment. Again, this difference is statistically significant ($p = 0.017$). These observations are consistent with a positive effect of party polarization on the centrist candidate's electoral prospects following his entry into the race.

Table 2. Centrist's vote share ranking.

		Top	Second	Last
All 8 periods	Extreme	46.9%	33.3%	19.8%
	Moderate	27.1%	29.2%	43.8%
	<i>p-value</i>	0.132	0.416	0.038
Periods 9–12	Extreme	45.8%	33.3%	20.8%
	Moderate	14.6%	29.2%	56.2%
	<i>p-value</i>	0.043	0.419	0.017
Periods 13–16	Extreme	47.9%	33.3%	18.8%
	Moderate	39.6%	29.2%	31.2%
	<i>p-value</i>	0.345	0.475	0.173

Observe that in the extreme treatment, the frequencies with which the centrist candidate obtains the highest, second highest and lowest vote share remain stable throughout the eight periods. By contrast, in the moderate treatment, the frequency with which the centrist candidate obtains the highest vote share increases sharply over time (from 8.3% in period 9 to 41.7% in period 16), while the frequency with which he obtains the lowest vote share decreases (from 58.3% in period 9 to 25% in period 16). Moreover, the change in these frequencies happens mainly in the last four elections of the series. This is consistent with

(1) our previous observation on the evolution of candidates' vote shares and (2) participants on the losing side gradually learning to desert their candidate and vote for the centrist in an apparent attempt at preventing the election of the candidate on the opposite side. Table 2 reports that while differences across treatments are statistically significant in the first four elections of the series, they are no longer statistically significant in the last four elections ($p = 0.345$ for the highest vote share; $p = 0.173$ for the lowest vote share).

As a third way to examine the effect of party polarization on the electoral prospects of the centrist candidate, I now look at the election probability of the centrist. This probability depends on (1) the centrist being in the winning set, that is, obtaining the highest vote share among the three candidates, and (2) the size of the winning set, that is, the number of candidates tying for first place. Specifically, if the centrist is alone in the winning set, he is elected with probability one. If he ties for first place with another candidate, he is elected with a probability of one-half. Intuitively, the higher the likelihood of election for the centrist candidate, the better his electoral prospects are. Figure 4 displays the evolution of this probability.

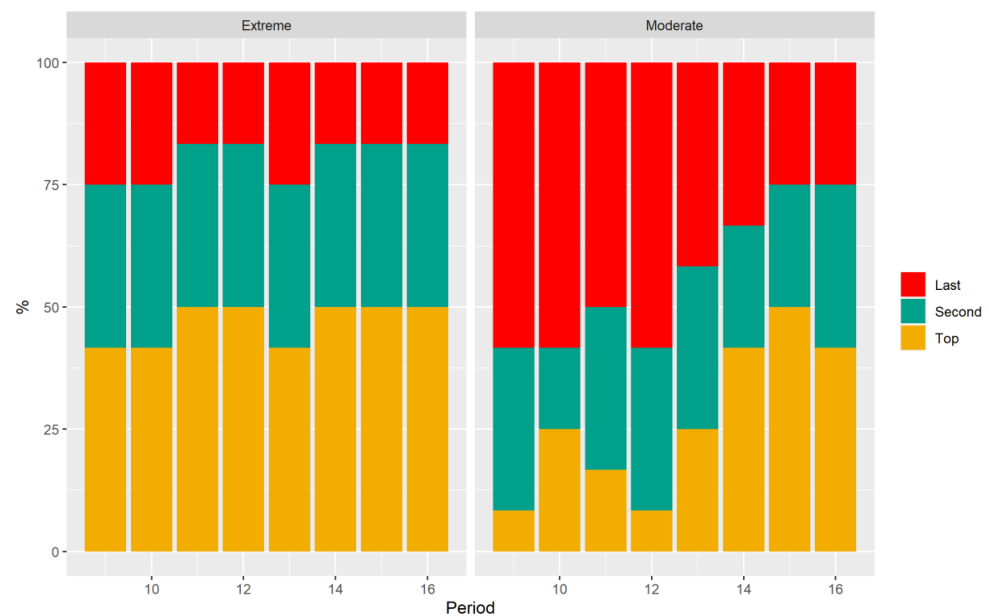


Figure 4. Centrist's election probability.

Unsurprisingly, given our previous observations, the probability of election for the centrist candidate is initially much higher in the extreme treatment than in the moderate treatment. Over the first four elections (periods 9 through 12), the centrist candidate is elected with a 10.4% probability in the moderate treatment compared to a 40.6% probability in the extreme treatment. This difference is statistically significant ($p = 0.027$). Moreover, the difference between treatments fades away during the last four elections (periods 13 through 16) due to a sharp increase in the election probability of the centrist in the moderate treatment (from 16.7% in period 13 to 37.5% in period 16). Over these last four elections, the centrist candidate is elected with a 33.3% probability in the moderate treatment compared to a 45.8% probability in the extreme treatment. This difference is no longer statistically significant ($p = 0.239$).

Interestingly, the difference between treatments in the election probability of the centrist candidate during the first four elections is partially due to larger winning sets in the moderate treatment compared to the extreme treatment. Table 3 reports the composition of the winning set for each treatment.¹⁶ Over the first four elections (periods 9 through 12), the centrist candidate is more often in the winning set in the extreme treatment than in the moderate treatment (19 versus 13 of the 48 elections). Moreover, conditional on being in the winning set, the centrist candidate wins outright 89% of the time in the extreme

treatment (17 of the 19 elections) compared to a mere 23% in the moderate treatment (3 of the 13 elections).¹⁷ In other words, conditional on the centrist obtaining the highest vote share, his election is more certain when the left and right candidates are more polarized. In line with our previous observations, this difference between treatments fades away as elections are repeated. Indeed, over the last four elections (periods 13 through 16), conditional on being in the winning set, the centrist candidate wins outright 87% of the time in the moderate treatment (13 of the 15 elections), which is a rise from 23% during the first four elections. This frequency is now like the one from the extreme treatment (91%, or 21 of the 23 elections).

Table 3. Composition of the winning set.

		Outright Wins		Two-Way Ties	
		{C}	{L}, {R}	{L, C}, {R, C}	{L, R}
All 8 periods	Extreme	38	47	4	7
	Moderate	16	58	12	10
Periods 9–12	Extreme	17	24	2	5
	Moderate	3	31	10	4
Periods 13–16	Extreme	21	23	2	2
	Moderate	13	27	2	6

4.2. Individual Voting Behavior

I now look at participants' voting behavior.

I start by observing that the effect of party polarization on the electoral prospects of the centrist candidate is explained by the voting behavior of the leftists (participants located from four through seven) and the rightists (participants located from 13 through 16). This is because throughout the eight elections with the centrist candidate, the median voters (participants at 10) vote almost exclusively for the centrist candidate. Specifically, 90.6% (respectively, 83.3%) of the voting decisions of the median voters in the moderate treatment (respectively, extreme treatment) involve a vote for the centrist candidate.¹⁸ The rest of the time, the median voters either cast a vote for one of the other two candidates (8.33% in both treatments) or abstain from voting (1.04% in the moderate treatment; 8.33% in the extreme treatment). Neither difference between treatments is statistically significant.

From now on, I consider only the leftist and rightist voters. Moreover, I pool their voting data since, as discussed at the beginning of the section and shown in Table A2 in the Appendix D, participants with symmetric positions (i.e., participants at 7 and 13, 6 and 14, and so on) tend to behave similarly.

Figure 5 displays the evolution of leftists' and rightists' voting decisions. These participants have a choice between four voting decisions: (1) vote for their candidate (Own side), that is, the left (respectively, right) candidate for a leftist voter (respectively, rightist voter); (2) vote for the opposite candidate (Opposite side), that is, the right (respectively, left) candidate for a leftist (respectively, rightist); (3) vote for the centrist candidate (Centrist); and (4) abstain from voting (Abstain).

Throughout the eight elections of the series, only a tiny fraction of these participants' voting decisions involved abstaining or voting for the candidate located on the opposite side.¹⁹ Table 4 reports that the abstention rate is a mere 0.7% (respectively, 1.4%) in the moderate treatment (respectively, extreme treatment) and that only 4.3% (respectively, 5.2%) of the voting decisions in the moderate treatment (respectively, extreme treatment) involve a vote for the candidate located on the opposite side. The frequency of these two types of voting decisions is not statistically different between treatments.

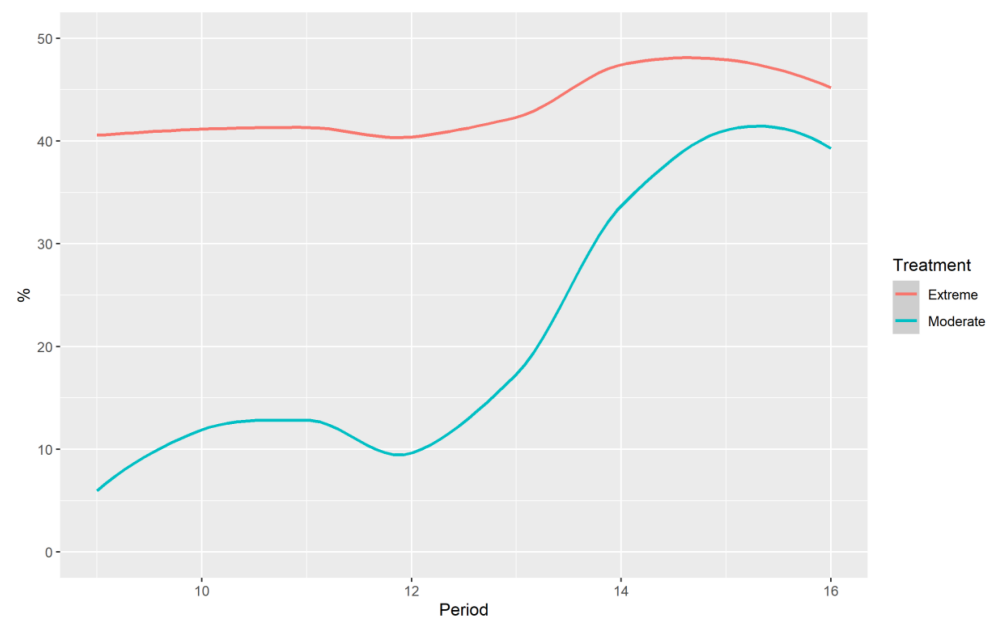


Figure 5. Voting decisions of the leftists and rightists.

It follows that the effect of party polarization on the electoral prospects of the centrist candidate lies in the decisions of the leftists and rightists to vote for their candidate or the centrist candidate. In period 9, less than 20% of the leftists and rightists cast a vote for the centrist in the moderate treatment. This compares with almost one-third of them in the extreme treatment. These proportions remain stable throughout the first four elections (periods 9 through 12). As reported in Table 4, 18.3% of the voting decisions in the moderate treatment involve a vote for the centrist candidate compared to 31.5% in the extreme treatment. This difference is statistically significant ($p = 0.037$). Then, as elections are repeated, some leftists and rightists in the moderate treatment start deserting their candidate and cast a vote for the centrist. The proportion of the leftists and rightists who vote for the centrist candidate increases in the moderate treatment, reaching 29.2% in period 16, which is comparable with the 31% in the extreme treatment. Over the last four elections, the difference between treatments (25.8% in the moderate treatment versus 31.7% in the extreme treatment) is no longer statistically significant ($p = 0.162$).

Table 4. Voting decisions of the leftists and rightists.

		Own-Side Candidate	Centrist Candidate	Opposite-Side Candidate	Abstain
All 8 periods	Extreme	61.8%	31.6%	5.2%	1.4%
	Moderate	72.9%	22.1%	4.3%	0.7%
	<i>p-value</i>	0.035	0.052	0.54	0.327
Periods 9–12	Extreme	61.9%	31.5%	5%	1.7%
	Moderate	76.5%	18.3%	4.6%	0.6%
	<i>p-value</i>	0.042	0.037	0.495	0.239
Periods 13–16	Extreme	61.7%	31.7%	5.4%	1.2%
	Moderate	69.4%	25.8%	4%	0.8%
	<i>p-value</i>	0.091	0.162	0.479	0.5

Those leftists and rightists who desert their candidate and cast their vote for the centrist seem to do so with the hope of preventing the election of the candidate on the opposite side. This inference comes from two observations. First, on average, 84% of the leftist and rightist votes received by the centrist in an election come from one side, either

the leftists or the rightists. This proportion is pretty similar across treatments (80.8% in the moderate treatment; 87.1% in the extreme treatment) and increases only slightly over the whole series of eight elections (from 83.2% in period 9 to 86.8% in period 16).

Second, the leftist and rightist votes that the centrist receives come almost exclusively from the side whose candidate is trailing among the left and right candidates. To show this, I call the left (respectively, right) the *leading side* when the vote share of the left candidate (respectively, right candidate) exceeds the vote share of the right candidate (respectively, left candidate). I call the other side the *trailing side*.²⁰ Figure 6 displays the evolution of the average number of votes that the centrist receives from the leading and trailing sides in an election. In both treatments, the average number of votes from the trailing side is larger than the average number of votes from the leading side. Table 5 shows that in the extreme treatment (respectively, moderate treatment), the centrist receives on average 2.7 (respectively, 1.8) votes from the trailing side compared to only 0.59 (respectively, 0.54) from the leading side. Moreover, the average number of votes received from the leading side tends to remain stable over the eight elections and is similar across treatments ($p = 0.517$). By contrast, the average number of votes received from the trailing side is initially higher in the extreme treatment than in the moderate treatment (2.27 votes versus 1.56 votes in period 9).

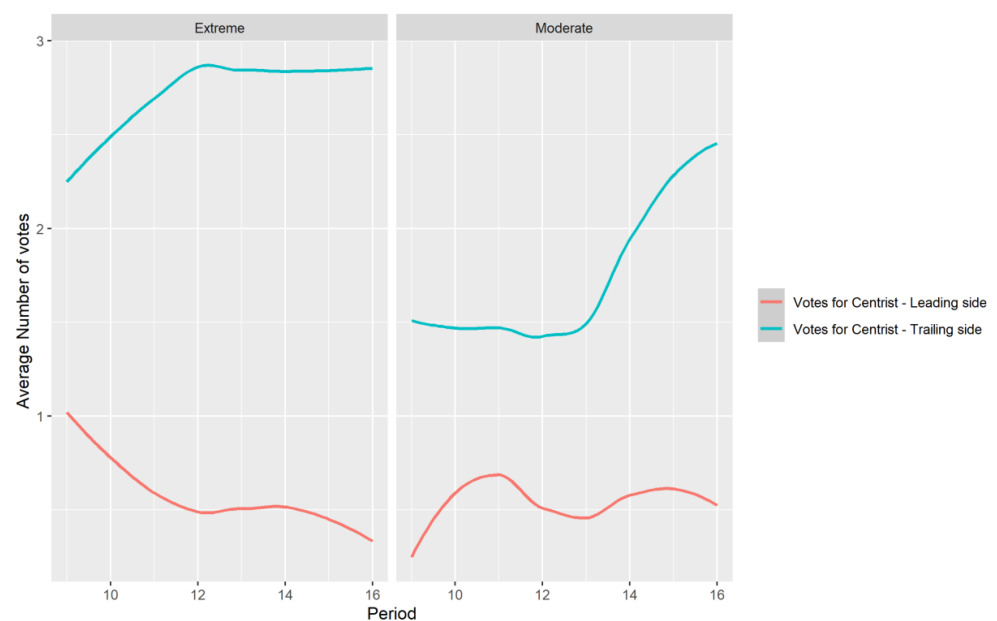


Figure 6. Average number of the centrist's votes from the leading and trailing sides.

Moreover, this number increases in both treatments. However, it does so at different times, namely, during the first four elections in the extreme treatment versus the last three elections in the moderate treatment. During the first four elections, the centrist received on average 2.6 votes from the trailing side in an election of the extreme treatment compared to 1.5 votes in an election of the moderate treatment. The difference between treatments is statistically significant ($p = 0.006$). This number is slightly bigger during the last four elections of the extreme treatment (2.85 votes) and rises more strongly in the moderate treatment (2.05 votes). The treatment difference is no longer statistically significant at the 5% level ($p = 0.058$).

Table 5. Centrist's votes from the leading and trailing sides.

		Trailing Side	Leading Side
All 8 Periods	Extreme	2.7	0.59
	Moderate	1.8	0.54
	<i>p-value</i>	0.027	0.517
Periods 9–12	Extreme	2.6	0.72
	Moderate	1.5	0.53
	<i>p-value</i>	0.006	0.273
Periods 13–16	Extreme	2.85	0.46
	Moderate	2.05	0.55
	<i>p-value</i>	0.058	0.336

5. Conclusions

Several countries have experienced a rise in party polarization. The US is a case in point, where Democrats and Republicans have been polarizing for more than four decades. This observation raises the question of whether greater party polarization can improve the electoral prospects of a new centrist candidate. The paper investigates this question using a laboratory experiment where a new centrist candidate enters the race between a left candidate and a right candidate. I varied the polarization of the left and right candidates while keeping the vote base of each candidate unchanged (that is, every voter's preference ranking of the candidates is independent of polarization). Participants in the experiment act as voters, with strategic voting behavior as the channel through which party polarization can affect the centrist's electoral prospects.

The paper yields two main conclusions. First, party polarization initially improves the electoral prospects of a new centrist candidate. Indeed, following his entry into the race, the centrist candidate captures more votes and is more likely to be elected when the left and right candidates are more polarized. Second, the effect of party polarization fades away as elections are repeated. This happens because of a gradual improvement in the electoral prospects of the centrist candidate when the left and right candidates are less polarized. This improvement follows from the voters on the losing side learning to desert their candidate and strategically vote for the centrist candidate in an apparent attempt at preventing the election of the candidate on the opposite side.

These results have three interesting implications. First, my results, obtained in a controlled setting, are consistent with the empirical finding, obtained for example in the context of British elections (see Nagel and Wlezien, 2010 [7]), of a positive relationship between the electoral fortunes of a centrist party (the Lib Dems in the British example) and the polarization of the left and right parties (the Labour and Conservative parties in the British example). Second, my results offer an alternative, possibly complementary, explanation for this empirical finding. The standard explanation relies on polarization triggering an expansion of the set of voters who prefer the policy position of the centrist candidate. Since, in the experiment, parties' vote bases are independent of polarization, the explanation for such a positive relationship relies instead on the strategic behavior of voters who desert their candidate and strategically cast their vote for the centrist. A third, game-theoretic, implication of my results is to point out the focal role of party polarization in elections: in the experiment, party polarization makes focal a vote for the centrist candidate, inducing voters to strategically vote for the centrist instead of their preferred candidate.

While this study identifies an effect of party polarization, it is important to remember that several features of actual elections are absent from the experimental design. For example, missing from a laboratory experiment, voters' party attachment or partisanship may deter some voters on the trailing side from strategically deserting their candidate in favor of a new centrist candidate. This may weaken the effect of party polarization on the electoral prospects of a new centrist candidate. In addition, a change, from one election to another, in the identity of the candidates representing the left and right parties

is another feature of actual elections that is missing from the experimental design. In the experiment, an election is followed by another, identical one, which helps participants learn to coordinate their votes over time. Would voters manage to strategically coordinate their votes on a new centrist candidate if the identities of the candidates representing the left and right parties change from one election to the next? At the same time, the repetition of identical elections in the experiment may capture the coordination role of other mechanisms, such as pre-election polls, that are absent from the experiment (Forsythe, Myerson, Rietz and Weber, 1993) [8].

Several robustness checks and extensions of the experimental design are left for future research. First, each experimental group is composed of eleven participants acting as voters. Future experiments should investigate how the effect of party polarization on strategic voting behavior and the centrist's electoral prospects vary as we increase the size of the group. Second, voting is costless in the experiment, which explains why participants rarely abstained from voting. Future experiments should make voting costly to capture a potential effect of party polarization that passes through voters' turnout decisions. This would add to the 'strategic voting behavior' channel captured in this experiment. Finally, the experimental design varies the degree of party polarization while keeping voter polarization unchanged. This feature captures the argument that party polarization in the US started to increase before voter polarization (McCarty, 2019 [2]). However, one could imagine a situation where the increase in party polarization is accompanied or preceded by a rise in voter polarization. In such a situation, would an increase in party polarization still be associated with better electoral prospects for a new centrist candidate?

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Data Availability Statement: Data are available from the author upon request.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A. Instructions

Appendix A.1. General Rules

Welcome and thank you for participating in this experiment. Before describing the experiment, we wish to inform you of some important rules and practical details.

- The experiment will last approximately 90 min.
- You will receive a 5-dollar show-up fee for arriving on time. In addition, you will receive additional earnings, which will depend on decisions you and other participants make during the experiment.
- Your total earnings will be paid out to you privately and in cash at the end of the experiment. No other participant will be told how much money you have earned during the experiment.
- It is important to remain quiet and not talk to other participants during the experiment. If you have a question at any time, please quietly raise your hand, and someone will come to you. Participants who do not respect the silence requirement will be asked to leave.

Appendix A.2. Experiment Instructions

Appendix A.2.1. Experimental Rounds and Groups

The experiment will consist of several independent rounds. At the start of the experiment, you will be randomly assigned to a group comprised of 11 participants. You will remain in this group throughout the experiment. That is, you will interact with the same

10 participants in each round of the experiment. No participant will find out which persons were in her group. Your earnings in a particular round will depend on the decisions made in your group in that round. What happens in your group does not affect the participants in the other group and vice versa. At the end of the experiment, one round will be randomly chosen for payment. A ball will be drawn from an urn containing one numbered ball for each round of the experiment. Your earnings will depend only on the decisions made in your group during the round corresponding to the drawn ball.

Appendix A.2.2. Group Choice and Individual Earnings

In each round of the experiment, the participants in your group will choose from a set of alternatives by way of voting. We will explain the voting rules below. These rules and the set of alternatives will change during the experiment. You will be informed when these changes occur. Irrespective of the voting rule, your earnings and those of the other participants in your group will depend on which alternative your group chooses.

Each alternative will be designated by a color and associated with a number so the alternatives can be arranged on a line as in the figure below. In addition, each participant is assigned a number on the line, which we will call her ideal position. For example, Figure A1 depicts a case with two alternatives, Orange and Blue. Orange has position 8 and Blue has position 14. The ideal positions of the participants in your group are marked with “X” on the picture, with your ideal position highlighted in red. In this example, your ideal position would be 5. Another participant is at the same position, another at 1, another at 3, and so on.

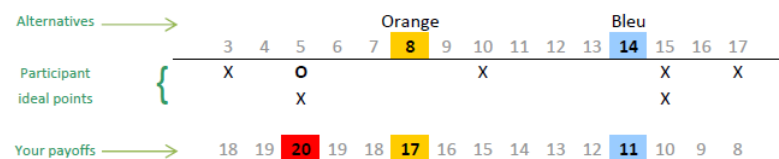


Figure A1. Example—Alternatives and ideal positions.

In each round, the payoff of a participant is equal to 20 dollars minus the distance between his or her ideal position and the position of the alternative chosen by your group. For example, the picture above indicates that your payoff is 17 dollars ($= 20 - (8 - 5) = 20 - 3$) if your group chooses Orange, and 11 dollars ($= 20 - (14 - 5) = 20 - 9$) if your group chooses Blue. Similarly, the payoff of the participant located, for example, at 15 is 13 dollars ($= 20 - (15 - 8) = 20 - 7$) if your group chooses Orange, and 19 dollars ($= 20 - (15 - 14) = 20 - 1$) if your group chooses Blue. Figure A2 summarizes the payoffs for all participants depicted in this example.

Participant located at ...	Alternative chosen by the group	
	Orange (8)	Blue (14)
3	$20 - 5 = 15$	$20 - 11 = 9$
5	$20 - 3 = 17$	$20 - 9 = 11$
10	$20 - 2 = 18$	$20 - 4 = 16$
15	$20 - 7 = 13$	$20 - 1 = 19$
17	$20 - 9 = 11$	$20 - 3 = 17$

Figure A2. Example—Payoffs.

Each participant will keep the same ideal position throughout the experiment. So, in each round of the experiment, you will be interacting with the same group of participants, and each participant in your group will have the same ideal position in each round. While these aspects remain unchanged throughout, the voting rule and the set of alternatives from which your group will choose will change.

Appendix A.2.3. Voting Rule

In each round, each participant will be asked to vote for one of the available alternatives. Each participant may also choose not to vote. All participants in your group will make their decisions at the same time, without knowing the choices of others. After all participants in your group have submitted their votes, the computer will total the votes for each alternative in your group.

- If one alternative has received the largest number of votes, this alternative will be the one chosen by your group.
- If two or more alternatives receive the same largest number of votes, then the computer will randomly select one of those alternatives; this will be the one chosen by your group.

Here are two examples.

Example A1. *Suppose there are two alternatives: Orange and Blue. Suppose the number of votes for each alternative in your group is 4 for Orange and 7 for Blue. Then, Blue will be the alternative chosen by your group.*

Example A2. *Suppose there are three alternatives: Orange, Blue, and Green. Suppose the number of votes for each alternative in your group is 5 for Orange, 5 for Blue, and 1 for Green. Then the computer will randomly select Orange or Blue as the alternative chosen by your group; Orange and Blue are equally likely to be the chosen alternative.*

The voting rule will be changed later in the experiment. You will be advised when this will happen.

Appendix A.2.4. Information at the End of a Round

After all participants in your group have submitted their vote, the computer will display the “Results” screen, which will (1) remind you of your vote in that round, (2) inform you about how many votes each alternative has received in your group in that round, (3) which alternative has been chosen by your group in that round, and (4) your payoff in that round. After all participants in your group have seen the results, the next round will begin automatically. This will continue for several rounds.

Appendix B. Screenshots

See Figures [A3](#) and [A4](#).

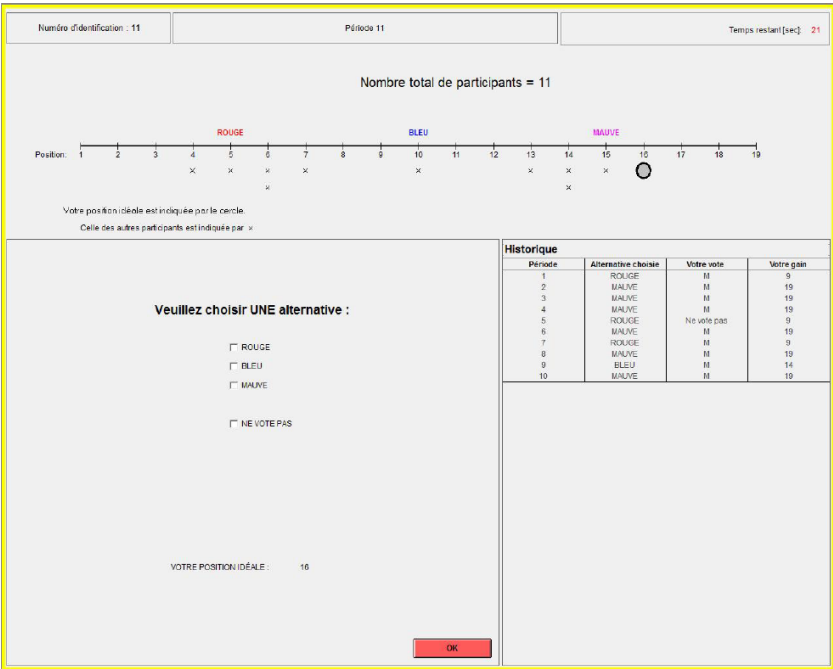


Figure A3. Vote Screen.



Figure A4. Result Screen.

Appendix C. First Series of Elections

The following Table A1 reports statistics on the first series of elections with two candidates, a left candidate and a right candidate (Periods 1 through 8). There are no statistical differences across treatments.

Average Max Vote Share is the average across elections of the highest vote share of the two candidates.

Average Winning Margin is the average across elections of the difference between the vote share of the winner and the vote share of the loser.

Frequency of Ties is the percent of elections in which both candidates are tied for first place.

Table A1. First Series of Elections.

		Average Max Vote Share	Average Winning Margin	Frequency of Ties
All 8 periods	Extreme	62.9%	25.9%	7.3%
	Moderate	60.8%	21.7%	10.4%
	<i>p-value</i>	0.399	0.394	0.374
Periods 1–4	Extreme	64.6%	29.1%	4.2%
	Moderate	61.7%	23.3%	6.2%
	<i>p-value</i>	0.234	0.234	0.5
Periods 5–8	Extreme	61.3%	22.7%	10.4%
	Moderate	60.0%	20.0%	14.6%
	<i>p-value</i>	0.261	0.261	0.411

Appendix D. Participants' Voting Behavior

Table A2 reports the frequency with which the participants at symmetric positions voted for (i) the candidate on their side, (ii) the centrist candidate, (iii) the candidate on the opposite side, or (iv) abstained during the second series of elections (periods 9 through 16). I group the participants on each side of the median into three groups: (i) Extreme left (at 4 and 5) or right (at 15 and 16) voters, who prefer LE to LM or RE to RM, respectively; (ii) Center left (at 6) or right (at 14) voters, who are indifferent between LE and LM or RE and RM, respectively; and (iii) Moderate left (at 7) or right (at 13) voters, who prefer LM to LE or RM to RE, respectively. Participants in symmetric groups tended to vote similarly, except for the moderate left voters in the moderate treatment. Compared to the moderate right voters, the latter voted more often for the centrist candidate and less often for their candidate.

Table A2. Voting decisions by position.

		Own Side Candidate	Centrist Candidate	Opposite Side Candidate	Abstain
Extreme treatment	Extreme left	70.3%	26.6%	2.08%	1.04%
	Extreme right	67.7%	29.7%	1.56%	1.04%
	<i>p-value</i>	0.494	0.483	0.5	1 (2-sided test)
	Center left	59.9%	31.2%	8.85%	0%
	Center right	52.6%	43.2%	3.12%	1.04%
	<i>p-value</i>	0.339	0.268	0.5	0.239
	Moderate left	65.6%	30.2%	4.2%	0%
	Moderate right	51%	24%	16.7%	8.3%
	<i>p-value</i>	0.124	0.388	0.171	0.5
Moderate treatment	Extreme left	63.5%	27.1%	7.3%	2.1%
	Extreme right	74.5%	20.8%	3.7%	1%
	<i>p-value</i>	0.25	0.382	0.327	0.295
	Center left	75.5%	18.8%	5.7%	0%
	Center right	76%	19.8%	3.7%	0.5%
	<i>p-value</i>	0.308	0.28	0.428	0.5
	Moderate left	63.5%	34.4%	2.1%	0%
	Moderate right	86.5%	13.5%	0%	0%
	<i>p-value</i>	0.048	0.049	0.239	1 (2-sided test)

Appendix E. Ranking of the Centrist Candidate

See Table A3.

Table A3. Frequencies of the centrist at the three vote ranks (equiprobable tie-breaking).

		Top	Second	Last
All 8 Periods	Extreme	43.2%	33.9%	22.9%
	Moderate	21.9%	28.6%	49.5%
	<i>p-value</i>	0.133	0.34	0.038
Periods 9–12	Extreme	40.6%	33.3%	26%
	Moderate	10.4%	28.1%	61.5%
	<i>p-value</i>	0.027	0.317	0.023
Periods 13–16	Extreme	45.8%	34.4%	19.8%
	Moderate	33.3%	29.2%	37.5%
	<i>p-value</i>	0.239	0.462	0.067

Notes

- ¹ The literature has offered several explanations for the rise in polarization. In the case of the US, Theriault (2008) [3] argues that it follows from the interaction of several factors, which include (1) congressional institutional changes, which have restricted congressmen's prerogatives and given more power to polarized leaders, and (2) the geographical sorting of voters, which leads to the election of more ideological representatives. Abramowitz (2010; 5) [4] proposes another explanation that relies on candidates paying special attention to the views of their partisans, who tend to be among the most ideologically polarized in the population: "... polarization at the elite level is largely a reflection of polarization among the politically engaged segment of the American public." Others, such as McCarty (2019; 99) [2], argue that there are many plausible causes for the rise in polarization: "... strong cases can be made for a wide variety of causes ranging from the Southern Realignment to increasing economic inequality and racial/ethnic diversity to the reemergence of strong party competition for the control of the federal government." At a more general level, see Osborne (1995) [5] or Bol, Dellis and Oak (2017) [6], among others, for a review of explanations for party polarization, which have been identified in the theoretical literature on electoral competition.
- ² Bol, Blais and Labbé St-Vincent (2018) [19] is a rare laboratory experiment with both strategic candidacy and strategic voting. However, it does not look at polarization, contrasting with the present paper.
- ³ For a detailed review of this literature, see Bol, Dellis and Oak (2016, 2017) [6,20].
- ⁴ The experimental instructions use neutral language, designating candidates as alternatives and referring to them by colors, as is common practice in the experimental voting literature (e.g., Forsythe, Myerson, Rietz and Weber, 1993) [8]. For each group, colors (Blue, Green, Orange, Purple and Red) are assigned randomly to candidates. Appendices A–E provides the experimental instructions.
- ⁵ As Figure 1 indicates, there is one voter with each of the following ideal points: 4, 5, 7, 10, 13, 15 and 16. There are two voters with an ideal point of 6 and two other voters with an ideal point of 14. The two voters at 6 (respectively 14) obtain the same payoff from the left moderate as from the left extremist (respectively, from the right moderate as from the right extremist). The two voters at 4 and 5 (respectively, 15 and 16) prefer the left extremist to the left moderate (respectively, the right extremist to the right moderate). Finally, the voter at 7 (respectively, 13) prefers the left moderate to the left extremist (respectively, the right moderate to the right extremist).
- ⁶ These two series of elections were followed by two other series that addressed a different research question and are discussed in a separate paper; see Dellis and Vanberg (2021) [30] for details.
- ⁷ Having only two candidates in the first series of elections is meant to be consistent with Duverger's law (Duverger, 1954 [31]), which states that Plurality Voting tends to favor a two-party system.
- ⁸ It is worth mentioning that the centrist is the Condorcet winner, that is, the candidate who would defeat any of the other two candidates in a pairwise contest.
- ⁹ Virtually everybody who registered was able to participate in the experiment; only a small number of late-comers were not able to participate as the sessions were already fully booked. Almost all people who registered and participated in the experiment were students with a mix of undergraduate and graduate students. Students were registered in many programs, with a greater proportion of participants studying economics.
- ¹⁰ Instructions appear in the Appendix A. The experiment was computerized using the software Z-tree (Fischbacher, 2007 [32]).
- ¹¹ Screenshots of the *vote* and *result screens* are included in the Appendices A–E.
- ¹² I thank a referee for the suggestion to add this table.
- ¹³ It is worth mentioning that among the left and right candidates, the one leading at period 9 (that is, the one who obtains the maximum Left-Right vote share) is almost always the one who was leading at period 8 (that is, the period just before the addition of the centrist candidate) with the same frequencies in both treatments. Specifically, out of the 24 groups, 20 (10 in each treatment) have a leading candidate at period 8, and 4 (2 in each treatment) have a tie between the two candidates. Out of the 20 groups

with a leading candidate at period 8, 16 (8 in each treatment) have at period 9 the same candidate with the highest vote share among the left and right candidates.

- 14 Consistent with Duverger's law, participants tend to desert the trailing candidate (i.e., the candidate with the lowest vote share). In the extreme treatment, the average lowest vote share among the three candidates drops from 17.7% in period 9 to 8.6% in period 16. Similarly, in the moderate treatment, the average lowest vote share among the three candidates drops from 23% in period 9 to 13.6% in period 16. I shall return to this observation below when looking at participants' voting behavior.
- 15 In case of a tie, I assign the higher rank. For example, if the centrist ties for first place, I categorize him as having received the highest vote share. Alternatively, if the centrist ties with another candidate for the second-highest and lowest positions, I categorize the centrist as having received the second-highest vote share. It is worth mentioning that the conclusions are robust to breaking ties equiprobably (rather than in favor of the highest rank). For example, if the centrist ties for first place with another candidate, then with equiprobable tie-breaking, the centrist is categorized as having received the highest and the second-highest vote shares, each with frequency 1/2. Table A3 in the Appendix E reports the frequencies of the centrist candidate at the three vote ranks (highest, second-highest, and lowest) when ties are broken equiprobably.
- 16 No three-way tie occurred in any of the 192 elections of the second series.
- 17 Ties are primarily attributable to a setting with a small number of voters; they are rare in elections involving thousands or millions of voters. The above experimental results suggest that the election outcome is more uncertain for the centrist candidate when there is less party polarization.
- 18 It is worth mentioning that in the static game, voting for the centrist candidate is a weakly dominant strategy for a participant located at 10.
- 19 Voting for the candidate on the opposite side (i.e., one's least-preferred candidate) and abstaining from voting are, in the static game, weakly dominated strategies. The latter follows from costless voting, which explains why we observe in the experimental data (1) a low level of vote abstention and (2) no (statistically significant) treatment difference in vote abstention. However, the literature has found empirical evidence of a relationship between party polarization and voter turnout. The evidence is somewhat mixed. In the US, Abramowitz (2010) [4] finds a positive relationship and Rogowski (2014) [33] finds a negative one (particularly among citizens with lower levels of education). Lee (2013) [34] finds that the sign of the relationship depends on voters' level of education: negative for the least educated people (as in Rogowski's study) and positive for the most educated ones. In Latin America, Béjar, Moraes and López-Cariboni (2020) [35] find a positive relationship. In France, Munõz and Meguid (2021) [36] find that the effect of party polarization on voter turnout depends on the position of the voter relative to party positions. Future experiments might introduce some costs of voting. This could add a channel through which party polarization affects a centrist's electoral prospects. In the present experiment, the whole effect passes through strategic voting behavior. Making voting costly might add an effect that passes through voters' turnout decisions.
- 20 For simplicity, I exclude elections where the left and right candidates tie. It is worth mentioning that the results are similar if we include those elections and consider both sides as leading.

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