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RESEARCH ARTICLE / ÉTUDE ORIGINALE

The Impact of Political Knowledge on the Voting Decision

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Abstract

The article addresses ongoing debates in the study of political knowledge and voting behavior. The article identifies significant divergences in previous work which may explain why such debates persist, including in the measurement of political knowledge and the inclusion of confounding variables. The article remedies these issues in an observational study examining how political knowledge affects the impact of spatial considerations and cognitive shortcuts on the vote. The article also contributes the first randomized experiment on this research question in the literature. Using the framework of conjoint analysis, the experiment evaluates how political knowledge affects the impact of spatial considerations and cognitive shortcuts on the vote. The article hypothesizes that political knowledge will increase the impact of spatial considerations on the vote but will not modify the impact of cognitive shortcuts. This expectation is supported in both the observational and experimental results.

Résumé

L'article aborde les débats en cours dans l'étude des connaissances politiques et du comportement électoral. L'article constate des divergences significatives dans les travaux antérieurs qui peuvent expliquer la persistance de ces débats, notamment en ce qui concerne la mesure des connaissances politiques et l'inclusion de variables confondantes. L'article remédie à ces problèmes dans le cadre d'une étude d'observation examinant comment les connaissances politiques influencent l'impact des considérations spatiales et des raccourcis cognitifs sur le vote. L'article présente également la première expérience randomisée sur cette question de recherche dans la littérature pertinente. En utilisant le cadre de l'analyse conjointe, l'expérimentation évalue comment les connaissances politiques affectent l'impact des considérations spatiales et des raccourcis cognitifs sur le vote. L'article émet l'hypothèse que les connaissances politiques augmenteront l'impact des considérations spatiales sur le vote mais ne modifieront pas l'impact des raccourcis cognitifs. Cette hypothèse est confirmée par les résultats de l'observation et de l'expérimentation.

Keywords: Canada; voting behaviour; political knowledge; spatial model; cognitive shortcuts

Mots-clés: Canada; comportement électoral; connaissances politiques; modèle spatial; raccourcis cognitifs

Previous research has studied the impact of political knowledge on the decision making of voters, with varying results. Sniderman et al. (1993) and Lupia (1994) reported that less informed voters used cognitive shortcuts to efficiently make a correct voting decision. In contrast, Delli Carpini and Keeter (1996) and Bartels (1996) found that the voting decision changes at different levels of political knowledge. These different decision rules led less knowledgeable voters to vote differently than more knowledgeable counterparts. This disagreement continues to this day (Achen and Bartels, 2016; Lupia, 2016). Multiple factors may explain this controversy, including inconsistent measurements of political knowledge, omitted variables, and a singular focus on observational data.

This article addresses these limitations and makes three contributions to the literature. First, the article introduces revised predictions regarding the electoral behaviour of informed and uninformed voters. These predictions explain how political knowledge impacts the importance of the spatial model of voting behaviour (Downs, 1957) and cognitive shortcuts in the voting decision. The article predicts that informed voters should rely on the spatial model to a greater degree than uninformed voters. However, in contrast to previous research (Dalton, 1984; Sniderman et al., 1993; Clarke et al., 2009; Jessee, 2010), it predicts that all voters will rely similarly on cognitive shortcuts.

Second, the article provides an analysis of observational data. The article identifies significant variation in previous work when controlling for confounding variables and measuring political knowledge. In response, this article includes a comprehensive list of control variables in its observational analysis and measures political knowledge using an index of correct answers to factual questions, as recommended by previous work (Luskin, 1987; Zaller, 1992; Delli Carpini and Keeter, 1996; Milner, 2010). The article also provides multiple tests of validity for its measure of political knowledge. The analysis evaluates the impact of spatial considerations and cognitive shortcuts on the vote of informed and uninformed voters. The results confirm that the impact of spatial voting increases when political knowledge increases, while the impact of cognitive shortcuts does not vary with political knowledge.

Third, an original experiment tests these hypotheses. This is the first experiment to randomize informational stimuli to investigate how political knowledge influences the impact of ideological proximity and cognitive shortcuts on the vote. Combining the survey analysis with an experiment provides greater causal validity to the research design and greater trust in the estimates obtained in the analysis. The results of the experiment confirm that the impact of spatial voting increases when political knowledge increases, while the impact of cognitive shortcuts does not vary with political knowledge.

This article opens with a literature review of voting behaviour and political knowledge. This is followed by the formulation of hypotheses and a discussion of the empirical strategies employed to test whether political knowledge impacts the voting decision. The article then conducts original analyses relying on

observational data from the 2011 Canadian federal election and experimental data from 2016. It concludes with a discussion of the results and their implications.

Literature Review

The spatial model of voting assumes that voters are rational beings motivated by their own self-interest (Downs, 1957). Their support for a party is determined by the advantages gained from voting and constrained by the cost of voting. The benefits of voting are a function of voter proximity to the competing parties' platforms. The costs of voting include information costs and the time it takes to vote. The article focuses on the proximity model because it has been found to best explain political behaviour in Canada (Johnston et al., 2000) and because the directional model is designed to perform better in bipartisan contexts (Rabinowitz and Macdonald, 1989).

The spatial model of voting is cognitively demanding, requiring voters to have their own positions on issues, know the related positions of parties, and evaluate the distance between these positions. Some argue that it is rational for voters not to make such efforts, as the costs of fully informed voting are higher than the benefits of voting (Popkin, 1991; Lupia, 2016). Many studies argue that voters who cannot vote via the spatial model resort to cognitive shortcuts to make their voting decision at lower costs under imperfect information (Sniderman et al., 1993; Bartle, 2005; Clarke et al., 2004, 2009; Whiteley et al., 2013). These shortcuts can go beyond purely rational considerations and include affective considerations.

Three important cognitive shortcuts are party identification, leader evaluations, and economic evaluations. Party identification is a voter's psychological attachment to a party, typically since early socialization years (Campbell et al., 1960). Many argue that this variable serves as a cognitive shortcut (Dalton, 1984; Popkin, 1991; Lupia, 2016). Sniderman et al. (1993) and Bartle (2005) argue that leader evaluations will be stronger among less informed voters in order to compensate for their limited ability to vote spatially. Sniderman et al. (1993) also argue for a voting decision based on party performance rather than spatial considerations. Clarke et al. (2009) argue that these three variables simplify the voting decision, providing greater explanatory power than the spatial model. These variables can thus be used to evaluate the role of cognitive shortcuts on the voting decision and whether this role varies as a function of political knowledge.

Existing work does not clearly answer whether political knowledge affects spatial voting. Many argue that higher political knowledge makes its impact stronger (Delli Carpini and Keeter, 1996; Goren, 1997; Lau and Redlawsk, 2001; Boatright, 2008; Jessee, 2010; Singh and Roy, 2013; Stoetzer, 2019; Stubager et al., 2018). Other studies find limited or no variation in the strength of spatial considerations as a function of political knowledge (Cutler, 2002; Goren, 2004; Ansolabehere et al., 2008; Roy, 2009). Some studies find opposite results depending on whether they focus on issues or ideology. Knight (1985) finds that the impact of ideology is higher among informed voters but that issues have the same impact across groups, while Sniderman et al. (1993) find the opposite.

The picture is even blurrier for cognitive shortcuts. While some find that the impact of party identification varies with political knowledge (Knight, 1985;

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Jessee, 2010), others find the opposite (Sniderman et al., 1993; Goren, 1997; Roy, 2009; Weisberg and Nawara, 2010). The impact of leader evaluations changes from study to study. Sniderman et al. (1993) and Bartle (2005) find that it is stronger among the less knowledgeable, Clarke et al. (2009) identify a curvilinear relationship, and Whiteley et al. (2013) find a positive relationship. Meanwhile, Goren (1997), Cutler (2002), Roy (2009) and Weisberg and Nawara (2010) find no differing impact of leader evaluations. Few have focused on party performance evaluations, although Sniderman et al. (1993) found that they are more important to less informed voters.

These controversies are reason enough to pursue further research. A potential explanation for this ongoing controversy lies in the measurement of political knowledge. The scholarly consensus contends that measuring political knowledge as an index of correct answers to factual questions is superior to alternatives because such indices are objective, resistant to social desirability inflation and outperform competing measures (Zaller, 1992; Delli Carpini and Keeter, 1996; Schwarz and Schuman, 1997; Milner, 2010). They make it possible to verify whether respondents answered the questions correctly and resist their attempts to appear more politically informed than they are. Schwarz and Schuman (1997) show that self-reported political interest leads to inflated measures when factual questions are omitted. Political knowledge questions also show how much information respondents remember and use when making a voting decision (Zaller, 1992; Delli Carpini and Keeter, 1996). Luskin (1987) found that measures relying on factually correct information outperform competing measures such as the traditional levels of conceptualization (Campbell et al., 1960; Converse, 1964) and measures based on recognition and understanding. Yet past research sometimes uses education, levels of conceptualization, ability to locate parties' positions in reference to a voter's own, the probability of answering "don't know" to specific questions, self-reports that a voter based their vote on the party leader, or hybrid measures combining these variables. These measures are neither objective nor resistant to social desirability bias. The multiplication of different measurement procedures to account for political knowledge may explain varying study results. To remedy this issue, this article measures political knowledge with an index of correct answers to factual questions.

Existing survey analyses also often omit variables correlated to political knowledge and the vote such as ideology, economic considerations, party identification, and evaluations of party leaders, which can lead to omitted variable bias (Campbell et al., 1960). Different publications control for different factors during analysis, which may also explain divergent results. To remedy this issue, this article includes all these variables, alongside socio-demographic variables, in its survey analysis. This ensures that the estimates are not biased by their omission.

Finally, most research on political knowledge's impact on the vote relies on electoral surveys and other observational designs. These studies are vulnerable to the problems inherent to observational research. Researchers may be unable to control for important variables or may omit to control for a variable of unsuspected importance. Experiments can be used to manipulate variables randomly, increasing control and granting greater confidence that results are not influenced by confounders or omitted variables. In this case, experiments offer greater causal validity, while surveys offer greater ecological validity to the research design. Consistent results

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across these two modes of scientific inquiry justify stronger confidence that the observed relationships are properly estimated. This article makes use of this dual investigative strategy.

Hypotheses and Empirical Strategy

This article adopts the dominant perspective in the literature regarding the spatial model of voting but not regarding cognitive shortcuts. As argued above, the cognitive demands of the spatial model of voting are higher than those of cognitive shortcuts (Delli Carpini and Keeter, 1996; Clarke et al., 2009). Spatial reasoning is thus expected to be stronger among informed voters. In contrast, the literature on cognitive shortcuts suggests that voters prefer a simplified approach that focuses on whom they trust to govern, regardless of political platform details (Clarke et al., 2009). This suggests that informed voters would be more likely to be knowledgeable about parties' ideological positions, while less informed voters would only have access to cognitive shortcuts.

These expectations help formulate hypotheses regarding how different voters will make their voting decision. Only the votes of knowledgeable voters should depend on their proximity to political parties, as less informed voters are hypothesized to be unable to vote spatially. They have limited information about where parties are located on a left-right axis and how this relates to their own positions, if they hold any. However, there is no reason to expect a difference regarding cognitive shortcuts. Less informed voters are expected to possess the information necessary to use cognitive shortcuts, but so are knowledgeable voters. The latter will be at least as aware of information related to cognitive shortcuts as the former, and potentially even more so. Consequently, there is no reason to believe that knowledgeable voters will discount or ignore cognitive shortcuts when making voting decisions. The information asymmetry that occurs for spatial voting does not occur for cognitive shortcuts.

This explanation contrasts with much of the existing literature. Many argue that cognitive shortcuts have a greater effect for less knowledgeable voters (Knight, 1985; Sniderman et al., 1993; Bartle, 2005; Jessee, 2010; Clarke et al., 2009; Whiteley et al., 2013). These researchers stress that such voters will compensate for their lack of political knowledge by relying on other cues, such as party identification (Dalton, 1984; Popkin, 1991; Sniderman et al., 1993; Lupia, 2016), leader evaluations (Bartle, 2005) and performance evaluations (Sniderman et al., 1993; Clarke et al., 2009). This implies that cognitive shortcuts are of limited use to knowledgeable voters, who can make better choices without them. This view contends that these voters want to make the "correct" choice defined by the spatial model of voting, disregarding cognitive shortcuts in favour of spatial judgments. However, it is questionable that voters care that their votes match the expectations of the spatial model or that they will actively discount information about political leaders and parties because that information is affective in nature. Even if they consider ideological proximity in the voting decision, informed voters can still have opinions about party performance and like or dislike party leaders and political parties for affective and arbitrary reasons, and will include these considerations in their voting decision. Knowledgeable voters may also want to reduce the cognitive costs of

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making a voting decision (Popkin, 1991; Lupia, 2016). As such, they should be willing to use cognitive shortcuts. In this view, it would be expected that voters at all levels of political knowledge will rely on cognitive shortcuts when making a voting decision.
The hypotheses are as follow:

H1: The effect size (the beta coefficient) of ideological proximity on the vote will be stronger for knowledgeable voters than for less informed voters.

H2: The effect size (the beta coefficient) of cognitive shortcuts on the vote will not vary significantly as a function of political knowledge.

The hypotheses are tested by measuring whether changes in the beta coefficients for ideological proximity, party identification, leader evaluations and economic competence are statistically significant when political knowledge varies. This is consistent with the dominant approach in the literature (Bartle, 2005; Jessee, 2010; Clarke et al., 2009; Whiteley et al., 2013; Goren, 1997; Weisberg and Nawara, 2010; Cutler, 2002; Stubager et al., 2018; Knight, 1985; Sniderman et al., 1993; Roy, 2009; Dalton, 1984). This article relies on interactive variables to conduct these tests using conditional logistic regressions of the voting decision. Conditional logistic regressions contain multiple advantages over traditional multinomial logistic regression. First, they can analyze the voting decision by considering all competing parties at once, while multinomial logistic regression "is a model of only pairwise comparisons" (Alvarez and Nagler, 1998). This means that multinomial logistic regression cannot truly capture multiparty election choice because it treats the decision as a comparison between one party (the baseline category) and another party. It repeats this process for every party, holding the baseline category constant. This inaccurately portrays multiparty voter choice. It also fails to provide an account of the voting decision between pairs of parties that do not include the baseline category. For these reasons, Alvarez and Nagler (1998) state: "In most electoral settings multinomial logit is likely to represent the wrong model" (56). By considering all choice options simultaneously, conditional logistic regressions provide a better picture of the choice faced by voters in multiparty elections.

Second, conditional logistic regressions grant researchers the ability to include and distinguish individual-specific and alternative-specific variables in the same equation. An individual-specific variable characterizes an individual—for example, religion, race or gender. An alternative-specific variable concerns the options given to the individual—for example, leader evaluations. This differentiates between the variables that are constant characteristics of the voter and ones that vary across party. If the voting decision results from differences between parties, then the model should be able to portray this. Alvarez and Nagler (1998) write: "The multinomial logit model includes only information about the individual voters, but does not include the issue positions of the parties and the candidates. Since issue positions of parties and candidates are fundamental to both the spatial theory and our intuitions about the political world, multinomial logit is not the most useful discrete choice model" (56). This property grants researchers the ability to include variables that cannot be included in multinomial logits. Alvarez and

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Nagler (1998) write: "At a minimum, the spatial model requires conditional logit since the spatial model is based on the position of voters relative to parties" (56). Respondents' ideological location cannot explain the vote without also knowing the ideological location of parties. Even a measure of the difference in the voter's ideological distance between two parties—the best that can be achieved in the pairwise framework of multinomial logit—would fail to account for cases in which ideological distance is even smaller with parties outside of the pairwise comparison. The same applies to leader characteristics (Cutler, 2002). Raw leader scores contain limited information on their own if they are not contrasted with the scores of other leaders competing in the election. Furthermore, the importance of binary variables can be lost when the relevant party is not part of the pairwise comparison of multinomial logistic regression. For instance, identifying with the Conservative Party and believing it is the best at managing the economy may not appear to have an impact on the vote in a pairwise comparison between the Liberal Party and New Democratic Party (NDP). This may even occur if the voter is unlikely to vote for either party because of these preferences. I thus follow Alvarez and Nagler (1998) and Cutler (2002) in adopting conditional logistic regressions because this method considers the full set of options when estimating the voting decision and allows the introduction and correct estimation of important voting decision variables.

Third, conditional logistic regressions avoid the repetition of entries in the analysis by generalizing results for alternative-specific variables over the entire choice set. It is common in multinomial logit models to separate variables to account for multiple parties. For instance, dichotomous variables for party identification may be entered separately for each party under consideration and then be entered separately again for each pairwise comparison (see Blais et al., 2002, for an example). This can quickly increase the number of variables included in the model, especially if this number must be doubled to include interactive variables. This large number of coefficients can make results difficult to interpret and can create problems linked to having too few respondents in each category to provide good estimates. Conditional logistic regressions do not have this problem. Since the model considers the full choice set simultaneously, the effect of each alternative-specific variable is considered for all parties at once and generalized with a single coefficient. This makes interpretation much easier and avoids problems linked to the fragmentation of the sample size across too many variables. This is yet another advantage of conditional logit for this study.

Study 1: Observational Research Design

The analysis relies on data from the 2011 Canadian Election Study (CES). The 2011 election followed a tense period in Parliament. The Conservatives had been re-elected with a minority government in 2008. Shortly after the 2008 election, opposition parties banded together in an attempt to topple the government and form a Liberal-NDP coalition government supported by the Bloc Québécois. In response, the Conservatives invoked prorogation to suspend the activities of Parliament, thus preventing the no-confidence vote planned by the opposition parties. Further controversies affected the Conservatives, including accusations of

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illegal election spending and the Conservative cabinet being found in contempt of Parliament. After these developments, the government lost a no-confidence vote, triggering the 2011 election. It appears that the electorate was unmoved by these scandals, as the Conservatives won the 2011 election with a majority.

The 2011 dataset (Fournier et al., 2011) is selected because the 2015 survey (Fournier et al., 2015) and the 2019 phone survey (Stephenson et al., 2020) did not collect data on the ideological placement of parties. Furthermore, the measurement of political knowledge from 2011 is preferable to address concerns raised in previous works. These concerns include differences in knowledge between issue publics (Converse, 1964), gendered differences in knowledge regarding public policy (Stolle and Gidengil, 2010) and capturing the range and scope of information recalled (Luskin, 1987; Delli Carpini and Keeter, 1996). Lupia (2016) also stressed the importance of using measures of political knowledge that are theoretically relevant to the outcome of interest, criticizing the use of unrelated trivia questions. These considerations suggest that the commonly used questions in the CES may not be adequate for this study. The CES usually asks only two to four questions about political knowledge, requiring respondents to identify political actors by name. This measure does not satisfy the above considerations.

Thankfully, an additional measure of political knowledge was included in the 2011 CES study. This measure runs from 0 to 1 and is based on the sum of correct answers to eight close-ended questions monitoring knowledge about politics. The list of questions used to construct this scale can be found in online Appendix A. The wide range of topics ensures that the measure of political knowledge is not skewed due to uneven distribution of knowledge in the population in one domain (Converse, 1964; Stolle and Gidengil, 2010). It also captures the range of information possessed by voters (Luskin, 1987; Delli Carpini and Keeter, 1996). Finally, it is more apt at accounting for the kind of information used by voters in electoral decisions, offering a better theoretical connection to the outcome of interest than the traditional ability to recall names (Lupia, 2016). Many tests have evaluated the reliability and validity of this measure of political knowledge. It boasts an alpha of .53, which is higher than the average measure of political knowledge in the Comparative Study of Electoral Systems (CSES) survey (Gidengil et al., 2016). The variable also passes several benchmarks used to establish measure validity. It correlates with interviewers' assessment of respondent political knowledge, can predict turnout, and can discriminate between respondents with weak or strong constraints on their political beliefs. In other words, the measure is reliable and valid, in line with established benchmarks evaluating measures of political knowledge (Delli Carpini and Keeter, 1996; Milner, 2010; Converse, 1964; Luskin, 1987, Héroux-Legault, 2016). The results of these tests are reported in Appendix A.

Modelling and data

The analysis focuses on the vote outside Quebec. This is common practice in studies of electoral behaviour in Canada (Blais et al., 2002; Nevitte et al., 2000; Gidengil et al., 2012), as Quebec's party system is different from the rest of the country due to the presence of the Bloc Québécois in the province. This approach also boasts

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greater comparability with the experimental analysis. The analysis thus focuses on voters outside Quebec who had the possibility to vote for the Conservative Party, Liberal Party, NDP and Green Party.

The dependent variable is the voting decision, recorded as a dummy variable indicating the party voted for with 1 and other parties as 0. The analysis focuses on spatial proximity, party identification, leader evaluations, and evaluations of economic competence. As discussed in the literature review, these variables have theoretical implications for the role of political knowledge on the vote. Spatial proximity measures the proximity between voters and political parties on the left-right spectrum. The spectrum ranges from 0 to 10, where 0 represents an extreme left-wing position and 10 an extreme right-wing position. Distance can range between 0 (a voter and a party are located at the same point) and 10 (a voter is located at 0 and a party at 10, or vice versa). The measure of proximity is 10 minus the distance between voter and party, and then standardized from 0 to 1. One possible problem is that voters may grant their favourite party a position close to their own. To offset this possibility, the research design follows previous work (Cutler, 2002; Golder and Stramski, 2010) by using the average perception of the position of a given party among knowledgeable independents instead of a particular individual's perception of this party's position.[1] The model adopts a linear specification, as it is closer to the original Downsian formulation and offers a better fit to the data than alternatives in empirical tests (Thurner, 2000; Grynaviski and Corrigan, 2006; Singh, 2014). Party identification and which party best handles the economy are evaluated with dummy variables, while leader evaluations are measured with continuous variables ranging from 0 to 1. Spatial proximity and the cognitive shortcuts are all multiplied with political knowledge to generate interactive variables.

Finally, the analysis includes variables from economic and socio-demographic models of the vote, as well as earlier work on Canadian voting behaviour (Johnston et al., 1992; Blais et al., 2002; Gidengil et al., 2012). Four questions account for economic voting. The first two questions touch on sociotropic voting: the first question asked respondents whether the Canadian economy had become better, worse or about the same in the last year; the second question asked whether federal policies have made the economy better, worse or did not make much difference. The third and fourth questions touch on egotropic voting: the third asked whether the respondent's personal financial situation has become better, worse or stayed about the same over the last year; the fourth asked if policies of the federal government made the respondent's personal situation better, worse or did not make much difference. Socio-demographic variables include age, Catholicism, religiosity, atheism, French as a first language, being married, education, gender and region. Age is measured as the numerical age of the respondent.[2] Education is measured with respondents' self-reports of their highest level of education. Marriage is a dummy variable indicating whether a respondent is married or not. Religion is measured with two dummy variables, one indicating whether the respondent is Catholic and another indicating if the respondent does not have a religion. All other religious denominations include 6 per cent or less of respondents each. Religiosity is measured on a 5-point scale ranging from "no religion" to religion being considered "very important." The variable French is a dummy variable

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measuring whether a respondent speaks French as a first language or not. Gender is coded 1 when the respondent answered "male" and 0 when the respondent answered "female." Region is coded as a series of dichotomous variables. Atlantic Provinces is coded 1 when a respondent is from Newfoundland-and-Labrador, Prince Edward Island, New Brunswick, or Nova Scotia, and 0 otherwise. The West variable is coded 1 when a respondent is from Alberta, British Columbia, Saskatchewan, or Manitoba, and 0 otherwise. Ontario serves as the reference category. Descriptive statistics are shown in Table B1 in Appendix B.

Results

The results of the conditional logit are shown in Table B2 in Appendix B. The entries for ideological proximity, party identification, leader evaluations, and evaluations of economic competence should be interpreted as the impact of these variables when political knowledge is 0. As expected, proximity voting does not have a statistically significant impact on the vote under this condition. Furthermore, the three cognitive shortcuts (party leader, party identification, and best on economy) appear to have a statistically significant impact on the voting decision of uninformed voters. Political knowledge does not impact the vote on its own. Only one control variable is found to have a statistically significant impact on the vote. Western voters were more likely to vote for the NDP or the Green Party than Ontarians in 2011.

The interactive variables provide a direct test of the hypotheses. The Proximity × Knowledge variable has a coefficient above 0 and is statistically significant, indicating that proximity becomes more important to the voting decision as political knowledge increases. None of the analyzed cognitive shortcuts have a different effect when the value of political knowledge changes. The variables interacting knowledge with the cognitive shortcuts all fail to attain statistical significance at either the $p = .05$ or $p = .1$ levels. This confirms that knowledgeable voters use spatial information to a greater extent than less informed voters and that all voters similarly use cognitive shortcuts regardless of their political knowledge. In sum, the hypotheses are confirmed by the analysis.

Simulations were conducted to ascertain the magnitude of effect change and the importance of change in voting behaviour due to political knowledge. The simulation manipulates the value of political knowledge and updates the value of interactive variables accordingly. All other variables remain at their current value. The coefficient for ideological proximity varies from −1.99 to 3.73 when political knowledge increases from its minimum to its maximum value. This represents a large change in the impact of ideological proximity. Conversely, the changes are smaller in the case of cognitive shortcuts. Over the same range of political knowledge values, coefficients for party identification range from 2.06 to 0.83, those for leader evaluations range from 6.45 to 4.53, and those for economic evaluations range from 1.85 to 0.38. All of these variables are scaled from 0 to 1, allowing such comparisons. These show that changes for cognitive shortcuts are much smaller than the change occurring for political knowledge. Figures 1 to 4 illustrate the change in each variable. The y-axis is held constant across these figures to better compare change across variables.

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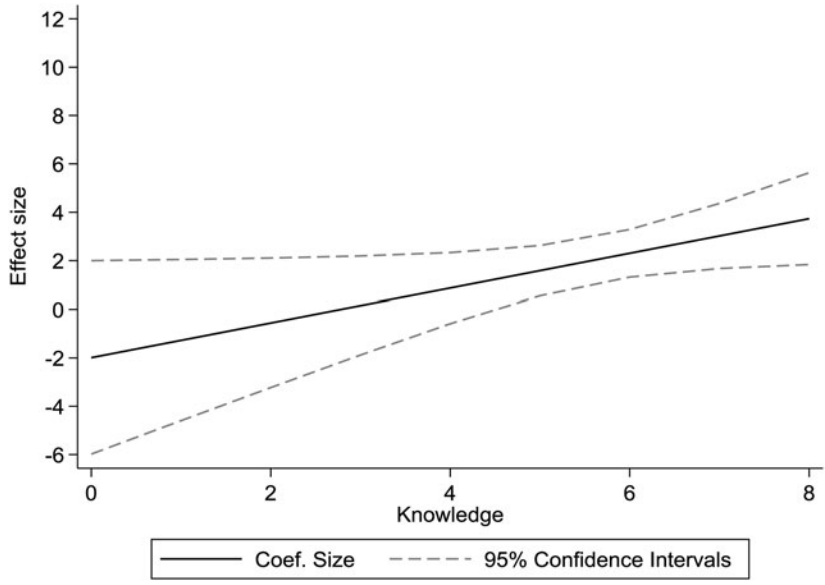

Figure 1 Impact of ideological proximity on the vote by political knowledge in Study 1

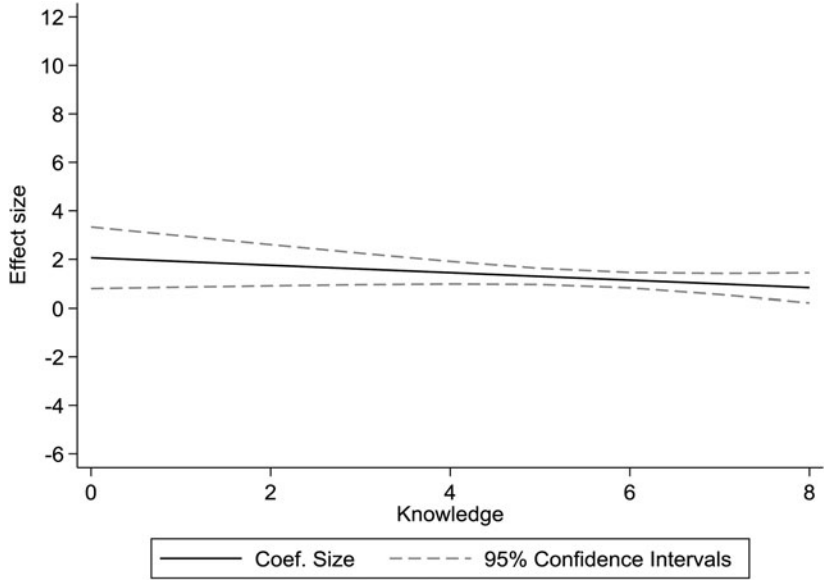

Figure 2 Impact of party identification on the vote by political knowledge in Study 1

To illustrate the impact on the vote, simulations are conducted to compare how often voters change their vote because of changes in political knowledge. To do so, the value of political knowledge was manipulated from one standard deviation

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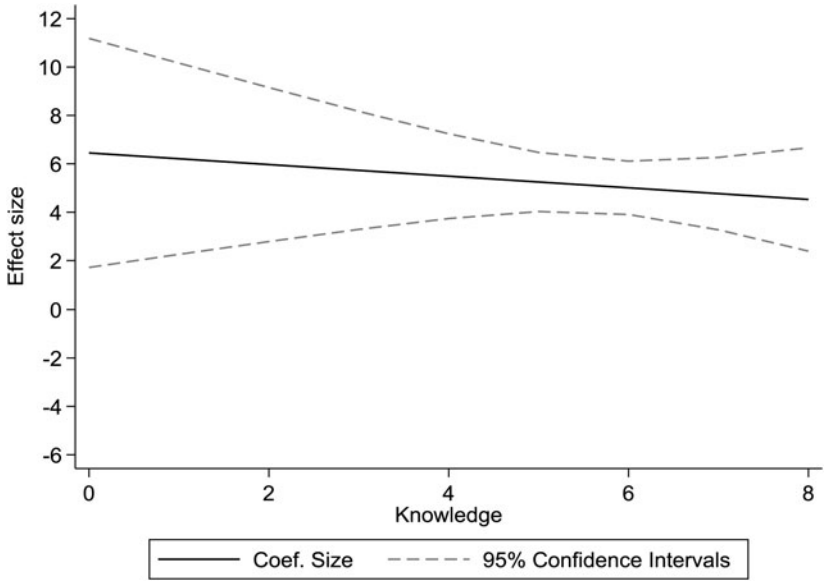

Figure 3 Impact of leader evaluations on the vote by political knowledge in Study 1

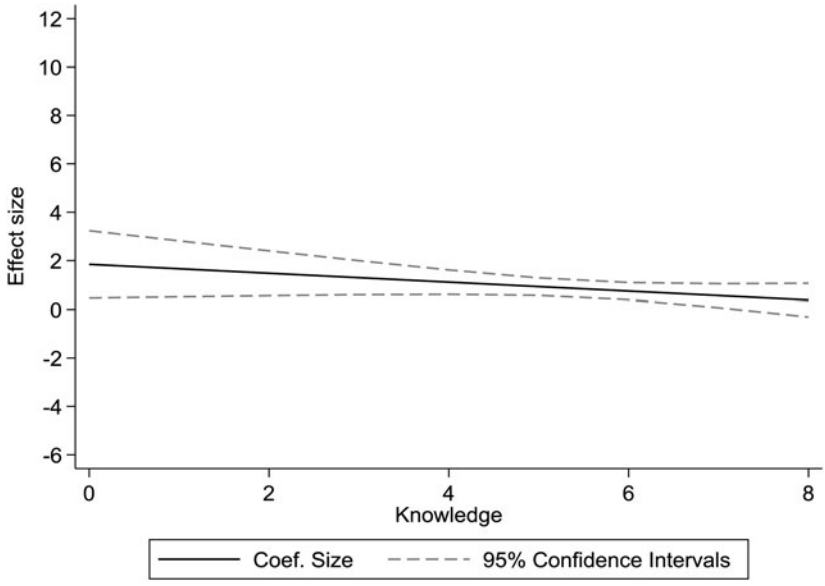

Figure 4 Impact of economic evaluations on the vote by political knowledge in Study 1

below the mean to one standard deviation above the mean and interactive variables updated accordingly. All other variables remain at their current value. This provides an estimate of the changes that could be observed if political knowledge increased

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by a moderate amount in the population. This simulation reveals that 8.60 per cent of voters are expected to change their vote. This shows that even moderate changes can lead to a considerable impact on the outcome of elections, especially under an electoral system in which small changes at the national level can change the results in many districts, as is the case in Canada.

Study 2: Experimental Research Design

The experiment uses the framework of conjoint analysis. This technique consists of varying multiple attributes of potential choice options at once to assess what influences decision making as a function of multiple criteria. Hainmueller et al. (2014) identify many advantages of this method. Like all experiments, conjoint analysis randomizes the independent variables. Furthermore, it allows for a better representation of electoral decisions than do survey experiments varying one criterion at a time. Elections are a complex environment in which voters are asked to vote based on multiple, simultaneously evaluated criteria. For this reason, the experiment manipulates attributes of the electoral candidates in multiple ways simultaneously, ensuring greater ecological validity. Third, conjoint analysis allows researchers to evaluate multiple different hypotheses out of a single behavioural outcome. This prevents a misestimation of effects due to omitted competing criteria. Forcing respondents to choose between two candidates distinguished by only one criterion will inevitably force them to make a choice on this basis, possibly overestimating its importance. Giving respondents multiple criteria to choose from lets them weigh the importance of the available criteria to their preference. This is important given this study's interest in the heterogeneous weight of different vote criteria.

The experiment was conducted in July and August 2016. It was impossible to monitor the impact of leader evaluations on the vote, since two parties were engaging in leadership elections during this period. The experiment thus focuses on three variables—that is, ideological proximity, party identification, and evaluations of the candidates' economic competence. The sample was provided by Qualtrics and is representative of the English-speaking adult population of Canada. It is composed of 1,513 online respondents, all Canadian citizens of voting age.

The experiment asked participants to imagine that their Member of Parliament (MP) had resigned and that they had to choose a new MP in by-elections. They were offered three candidates. The names, pictures, biographies, parties, and ideological placements of the candidates were randomized. To ensure that there would be no impact of racial, gender-based, or ethnolinguistic discrimination, all names were of Anglo-Saxon origin and all pictures displayed white men. Despite this precaution, differences may still be due to variation in age or perceived attractiveness of the candidates. To ensure that this was not the case, a chi-square test was conducted and showed that the vote was uncorrelated to candidates' pictures ($p = .32$). Biographies indicated the professional backgrounds, priorities, and past involvement of the candidates. One candidate was a teacher focused on education, one was an economist focused on creating jobs, and one was a lawyer focused on reforming democratic institutions. The economist represents the candidate with the better economic competence. Party affiliation was randomized between the Conservative, Liberal, and New Democratic parties. This information is used to

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monitor the importance of party identification on the voting decision. Both of these variables are dichotomous.

The experiment also resolves problems raised by the measurement of ideological distance. Unless relying on expert ratings or manifesto positions, measuring ideological distance in surveys is difficult because respondents may overestimate proximity to the party they vote for (Merrill et al., 2001). This is not the case in the experiment. Respondents were asked their location on an ideological spectrum ranging from 0 to 8. They were only shown the ideological location of the candidates after they had entered their own ideological location. This ensured that respondents were unable to influence their proximity to the candidates to match their voting preferences, limiting potential biases. Instead, they had to indicate their own position and then adapt to an externally given position for the candidates. Answering concerns raised by contrast, assimilation, and other biases constitutes another advantage of using the experimental approach. The ideological positions of the candidates were randomized along a left-right axis going from 0 to 8, where 0 is the leftmost position and 8 the rightmost position. Candidates were always ordered so that the NDP candidate would be to the ideological left of the Liberal Party candidate, who would always be to the ideological left of the Conservative Party candidate. The measure of ideological proximity runs from 0 to 1, where 0 indicates the maximum distance between a participant and the candidate and where 1 indicates that they have identical positions. Three examples of possible permutations are displayed in online Appendix C.

Modelling and data

The analysis relies once again on conditional logit, for the same reasons mentioned in Study 1. First, conditional logistic regressions can model the voting decision as a choice between multiple options and are thus more appropriate to study the voting decision in multiparty settings. Second, conditional logits allow the introduction of alternative-specific variables, granting the ability to evaluate the impact of party and candidate attributes in addition to the individual-level attributes of the voter. This grants the ability to observe the effect of variables that cannot be tested under other specifications, such as ideological distance. As stated by Alvarez and Nagler (1998), "the spatial model requires conditional logit since the spatial model is based on positions of voters relative to parties" (56). Third, this approach simplifies the analysis by limiting the number of coefficients needed to be interpreted and avoids potential problems caused by the multiplication of variables and the small sample sizes associated with them. Finally, maintaining the same approach grants a greater comparability between the results of Study 1 and Study 2.

This marks a departure from Hainmueller et al. (2014), who used ordinary least squares (OLS) to analyze the result of their conjoint experiment. The reason for the change is that they only offered two options to their experimental participants, which is typical of bipartism in the United States. In Canada, as in most developed democracies, this is not the case. Having only two options makes it possible to treat one party as 1, the other as 0, and estimate the impact of treatments using OLS regression. This is not possible when there are more than two options. Furthermore, variables such as ideological proximity and leader evaluations require

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taking into account the entire set of options and the attributes of these options. This cannot be done under OLS but can be done using conditional logit in a multiparty context (Alvarez and Nagler, 1998). This departure is not a large one, as Hainmueller et al. (2014) note that conditional logit is one of the "standard estimation approaches in the conjoint literature" (14). This is also supported by works in a variety of fields using conditional logistic regression to perform conjoint analysis (Ryan, 2011; Aizaki, 2012; Hauber et al., 2016). One important nuance is that the results of conditional logits can be less intuitive than those of linear regression. Consequently, simulations are conducted to facilitate interpretation of the findings. This article thus innovates by extending the approach of Hainmueller et al. (2014) to the multiparty contexts that characterize most democracies by using conditional logistic regression.

The dependent variable is the candidate for whom the respondent would vote. The independent variables include political knowledge, economic competence, party identification, ideological proximity, and three interactive variables multiplying political knowledge with each of the three other independent variables. Political knowledge is measured as the sum of correct answers to a series of 12 close-ended questions. The measure is more reliable than all but one of the measures used in the CSES survey (alpha = .62) (Gidengil et al., 2016). This measure includes the eight questions in Appendix A and four additional close-ended questions focused on issues relevant to Canadian politics that received significant news coverage after the election of the Liberal government in 2015. They can be found in online Appendix D.

Since the experiment is interested in estimating heterogeneous treatment effects, it also includes a series of control variables (Gerber and Green, 2012; Clark and Golder, 2015; Kam and Trussler, 2017). The experiment includes both socio-demographic and political controls. The socio-demographic controls include gender, speaking French as a first language, religion, education, region, and age. Gender is coded 1 if male, and 0 otherwise. Speaking French as a first language is coded 1, and 0 otherwise. The impact of religion is measured with two dummy variables identifying Catholics and atheists. Education is a continuous variable indicating the highest level of education attained by the respondent. Age is a continuous variable indicating the respondent's age.[3] Region is operationalized through dichotomous variables. The West variable is coded 1 if a respondent is from Alberta, British Columbia, Saskatchewan or Manitoba, and 0 otherwise. The Atlantic Provinces variable is coded 1 if a respondent is from Newfoundland-and-Labrador, Prince Edward Island, New Brunswick or Nova Scotia, and 0 otherwise. Ontario constitutes the reference category. Political controls include which party is considered the best to handle the economy and party thermometer scores. The first is important to distinguish between respondents' pre-existing beliefs regarding the economic competence of parties and the economic competence randomly attributed to candidates in the experiment. The second provides a summary evaluation of parties that accounts for participant preferences that are not randomly manipulated. This ensures that estimates for the random treatments are unaffected by such preferences. Party economic competence and thermometer scores are measured on a scale from 0 to 10. Since they vary across parties, they are operationalized as alternative-specific variables. Randomization checks were conducted to ensure that

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the experimental treatments were attributed evenly across the control variables. None of these tests reached statistical significance, showing that treatments and controls are indeed orthogonal to each other. Descriptive statistics are shown in Table E1 in Appendix E.

This research design constitutes an innovative contribution to the experimental study of the conditioning impact of political knowledge on political behaviour. While studies conducted in a laboratory setting have considered this question (Lau and Redlawsk, 2001; Singh and Roy, 2013), they did not use randomization to study how political knowledge influences the impact of ideology, party identification, and economic evaluations on the vote. The current experiment innovates by using a randomized research design to test whether the voting decision varies as a function of the interaction of these three variables with political knowledge.

Results

To test the hypotheses, a conditional logit is conducted to model the voting decision. Detailed results can be found in Table E2 in Appendix E. The findings confirm the results obtained with observational data. Once again, ideological proximity has no statistically significant impact on the vote of uninformed voters, but it has a statistically significant impact on the vote of informed voters, who are more likely to vote for a party ideologically close to them. Cognitive shortcuts also show the same pattern observed with survey data. They have a statistically significant impact on the voting decision when political knowledge is held at 0. No statistically significant differences are observed across knowledge levels on the impact of cognitive shortcuts, either at the $p = .05$ or the $p = .1$ levels. Political knowledge on its own does not have a significant impact on the vote. Belief in party competence in managing the economy is positive and significant, as are thermometer scores. This indicates that voters are more likely to vote for the party they prefer or trust to manage the economy. The fact that the randomly manipulated attributes of candidates are significant even with the inclusion of these controls confirms that this effect is due to the treatments and not to these other characteristics. In sum, the results of the experiments support the expectations of the hypotheses.

Only one of the socio-demographic controls is statistically significant. French respondents were significantly more likely to vote for the second candidate in the experiment. Given that all information about the candidates was randomized, this is unexpected. It should be noted that the table includes 18 different tests of statistical significance for socio-demographic controls, which increases the probability of obtaining significant results from random data. With an alpha of .05, 18 tests have more than 60 per cent chance of including at least one significant result from random data.[4] This is especially likely to have occurred with this variable, as the sample only includes a small number of French respondents. This means that even small differences in voting patterns account for a large proportion of French voters, thus potentially leading to significant effects. These considerations provide the best explanation of this trend.

One possible concern about these results relates to the power of the analysis. If the statistical power of the experiment is weak, the lack of change in the effect of cognitive shortcuts when political knowledge varies could be attributed to this

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limitation. This is especially important for heterogeneous effects, which require more statistical power to be identified because the "standard error of an interaction is roughly twice the standard error of the main effect" (Gelman et al., 2020). It should be first noted that the main effects of party identification, candidate economic competence, party economic competence, party thermometer scores and the heterogeneous effect of ideological proximity on the vote when political knowledge increases all attain conventional levels of statistical significance. There is thus good reason to think that the experiment does not suffer from issues of statistical power. Although recent working papers have been published on how to evaluate statistical power for conjoint experiments (Schuessler and Freitag, 2020; Stefanelli and Lukac, 2020), they are designed for a priori statistical power analysis. Since the experiment took place four years before their publication, this was impossible. Instead, I use a method developed by Bloom (1995) to identify the minimum detectable effect a posteriori.[5] Bloom finds that the minimum detectable effect an experiment can identify with a statistical power of 80 per cent equals the standard error times 2.80. This method is especially attractive because its calculation includes the larger standard errors of interactions and thus yields correspondingly larger minimum detectable effects for these variables. Consequently, the minimum detectable effects for the interaction of party identification and candidate economic performance with political knowledge are 1.18 and 0.95, respectively. This is about half of the coefficient obtained for the interaction of political knowledge and ideological proximity, which stands at 2.29. This means that the experiment has enough statistical power to detect variations in the impact of party identification or candidate economic competence, even if they are less than half as strong as the changes observed for ideological proximity. It is also worth noting that the experiment includes two distinct tests for cognitive shortcuts, which both result in null findings. The fact that the experiment is sufficiently powered to detect even modest effects and failed to find such effects twice allows us to conclude that Hypothesis 2 is correct and that the findings are not due to a lack of statistical power. This is further confirmed by the fact that the experiment finds statistically significant heterogeneous effects for ideological proximity, thus showing that it has sufficient statistical power to identify interaction effects. Further, Gelman et al. (2020) stress that another problem faced by analyses with insufficient sample size is a lack of replicability. The results do not exhibit this problem. There are two tests of cognitive shortcuts in the experiment, and they are in agreement with each other. Further, they are in agreement with the three tests of cognitive shortcuts in the survey analysis. The same is true of the two tests of ideological proximity provided in the survey and the experiment. If the design successfully replicates its findings twice for ideological proximity and five times for cognitive shortcuts, then it does not suffer from issues of replicability and thus shows no sign of insufficient statistical power.

Once again, simulations are conducted to illustrate how the impact of these variables changes as a function of political knowledge. The simulation manipulates the value of political knowledge, updating the value of interactive variables accordingly. All other variables remain at their current value. The coefficient for ideological proximity varies from −0.56 to 1.73 when political knowledge increases from its minimum to its maximum value. The changes are smaller in the case of cognitive shortcuts. Over the same range of political knowledge values, coefficients for party

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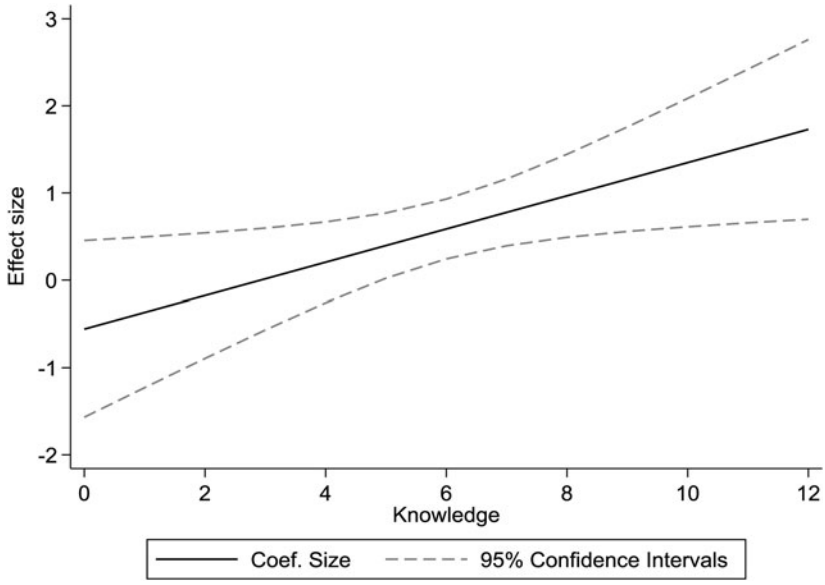

Figure 5 Impact of ideological proximity on the vote by political knowledge in Study 2

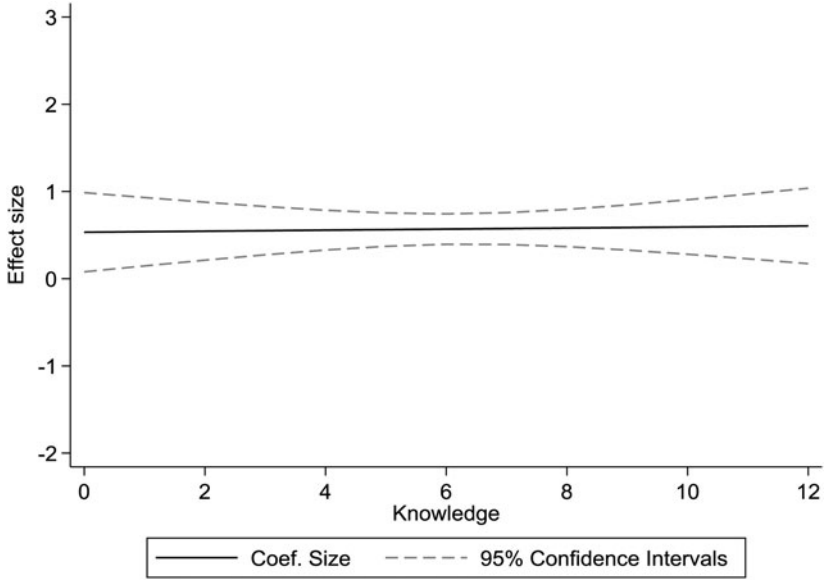

Figure 6 Impact of party identification on the vote by political knowledge in Study 2

identification range from 0.53 to 0.61 and those for economic evaluations range from 0.35 to 0.45. All of these variables are scaled from 0 to 1, allowing such comparisons. These show that changes for cognitive shortcuts are much smaller than

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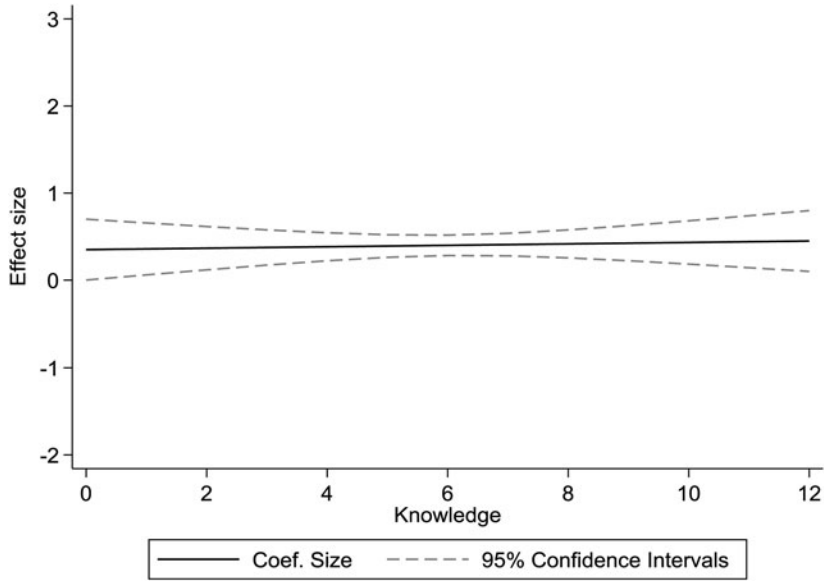

Figure 7 Impact of economic competence on the vote by political knowledge in Study 2

the change experienced for ideological proximity. Figures 5 to 7 illustrate the change in each variable. The *y*-axis is held constant across these figures to better compare change across variables.

A simulation was also conducted to identify how many voters would change their vote following a moderate change in political knowledge. The simulation varies the value of political knowledge from one standard deviation below the mean to one standard deviation above the mean. Interactive variables are adjusted accordingly. All other variables remain at their current value. The results indicate that 9.26 per cent of respondents would change their vote as a function of this change. This resembles the corresponding figure obtained in the survey analysis, strengthening trust in the results.

Discussion

This article makes three contributions to the discipline. First, it introduces revised predictions regarding political knowledge and political behaviour. They state that informed voters will rely on spatial voting to a greater extent than uninformed voters but that both groups will rely similarly on cognitive shortcuts. The predictions acknowledge that differences in political knowledge will matter for spatial reasoning, which is cognitively demanding, but that all voters should know enough to make their voting decision based on cognitive shortcuts. This second prediction contrasts with much of the literature, which argues that cognitive shortcuts play a stronger role among less informed voters. Both predictions are supported by the analysis. These tests considered four different variables—ideological proximity, party identification, leader evaluations, and evaluations of economic competence—

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and were conducted across two datasets relying on two different investigative frameworks. The analysis shows that the results are extremely robust to a variety of different specifications, since they are consistent even when the variables being tested and the method of analysis vary.

Second, the article highlights how variation in measures of political knowledge and omitted potential confounding variables can explain divergent results found in the literature regarding the role of political knowledge in voting decisions. The article contributes to this literature by measuring political knowledge as an index of objective political knowledge, as recommended by many researchers (Luskin, 1987; Zaller, 1992; Delli Carpini and Keeter, 1996; Milner, 2010), and by including an extensive list of controls to its statistical analysis in its observational study. The measure of political knowledge is also supported by many tests of validity. These precautions ensure that the measurement of political knowledge is not subjective or inflated by social desirability bias and provides greater trust that the estimates are not influenced by omitted variables. This analysis also offers a benchmark to evaluate the results of the experiment.

A third contribution of the article consists of including an experimental design alongside an observational design to study the moderating impact of political knowledge on the voting decision. This design is innovative, as previous studies did not rely on random assignment to study how the impact of ideological proximity and cognitive shortcuts changes when political knowledge varies. Studies that rely exclusively on observational data risk attributing causal effects mistakenly if the independent variables correlate to omitted confounding variables. Adding an experimental design alongside an observational study attempts to address these concerns. Conducting the analysis with both research strategies grants the results high ecological and causal validity. The fact that the results are the same across the two investigations provides greater trust in the results. Simulations show a change in vote choice of 8.60 per cent in the survey and 9.26 per cent in the experiment, revealing the importance of political knowledge to the voting decision and great consistency in the results. This is extremely important given the inconsistencies that characterize previous findings regarding the impact of political knowledge on the voting decision.

The article's findings invite the reinterpretation of previous results comparing the spatial model of voting and cognitive shortcuts. It has been found repeatedly that variables such as party identification, leader evaluations and economic evaluations better explain the voting decision than the spatial model of voting (Clarke et al., 2004, 2009; Whiteley et al., 2013). Since there are more voters who are poorly informed (Converse, 1964; Delli Carpini and Keeter, 1996), these results have been interpreted as confirming that voters with little political knowledge rely to a greater degree on these variables when voting. This article shows these variables outperform the spatial model because all voters use them, regardless of their degree of political knowledge, while only informed voters rely on spatial thinking to cast a vote. These results show that cognitive shortcuts are even more important to the voting decision than expected, since they are used by informed and uninformed voters alike. They also show that these two modes of thinking are not opposed but orthogonal.

Some readers may find this conclusion counterintuitive. If the importance of ideology increases when political knowledge grows, how can the importance of

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heuristics not go down? This apparent contradiction rests on a misunderstanding, relying on the incorrect assumption that any increase in one category must occur at the expense of the other, as in a zero-sum relationship. However, the present study tests its hypotheses with the logistic regression coefficients of interactive variables, which do not imply zero-sum relationships. Such coefficients do not entail that an increase in one value must be accompanied by a concomitant drop in another value. There is no mathematical requirement for one of them to go up when another goes down, or vice versa. Consequently, the impact of spatial considerations can vary as a function of political knowledge even if this is not the case for cognitive shortcuts. It is important to note that this method is used throughout most of the literature on the topic (Bartle, 2005; Jessee, 2010; Clarke et al., 2009; Whiteley et al., 2013; Goren, 1997; Weisberg and Nawara, 2010; Cutler, 2002; Stubager et al., 2018; Knight, 1985; Sniderman et al., 1993; Roy, 2009; Dalton, 1984) and that differences in results are thus not caused by a discrepancy in this regard between this article and previous publications.

Another contribution of this article is to focus on the Canadian case, which has received little attention from this literature since the works of Cutler (2002) and Roy (2009). Future inquiries should broaden the analysis to other countries. It would increase confidence in the results if they could be replicated in other democracies. Studying voting in other countries may help identify national characteristics that strengthen or weaken the impact of knowledge on the voting decision. Previous studies have found that context, including the degree of polarization of politics, can have a significant impact on the voting decision (Green, 2007; Lachat, 2008; Brockington, 2009; Singh, 2010). Further work is thus necessary to ascertain how these contextual effects influence the relationship between political knowledge and the voting decision.

Supplementary Material. To view supplementary material for this article, please visit https://doi.org/10.1017/S0008423923000410

Notes

1 This measurement strategy may raise some concerns that it reflects only knowledgeable respondents' views of party positions. However, the experiment adopts a different strategy to measure ideological proximity and obtains similar results, showing such concerns to be unwarranted.

2 Higher-order polynomial measures of age were also entered in the model and did not affect the substantive results.

3 Once again, higher-order polynomial measures of age do not substantively alter the results.

4 1−(0.9518)=60.28%

5 I would like to thank Dr. Julian Schuessler for advising this course of action.

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