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André Blais

Robert Young

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"Why Do People Vote? An Experiment in Rationality"

André Blais and Robert A. Young

The UNIVERSITY *of* WESTERN ONTARIO

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For further information:
Political Economy Research Group,
Department of Economics,
Social Science Centre,
London, Ontario, Canada N6A 5C2
phone: (519) 661-3877
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Why Do People Vote?

An Experiment in Rationality

André Blais and Robert Young

Département de science politique
Université de Montréal
Montréal, Canada

Department of Political Science
University of Western Ontario
London, Canada

ABSTRACT

The study presents the findings of an experiment in which students in two universities were exposed to a ten minute presentation about the rational model and the paradox of voting during the 1993 Canadian election campaign. Our data indicate that exposure to the presentation decreased turnout in the election by seven percentage points. Turnout was reduced mainly because the presentation diminished sense of duty. The effect was indirect, since there was no reference to attitudes such as sense of duty in the presentation. Framing the voting act in rational choice terms induced some students to reconsider whether they should feel obliged to vote.

Why Do People Vote?

An Experiment in Rationality[1]

Why so many people vote is surely the most puzzling paradox within rational choice theory. A rational citizen who calculates the expected utility of voting may estimate that who wins will make some difference to her. But she must recognize, when there are many electors, that her vote has only an infinitesimal probability of affecting the outcome of the election. At the same time, the costs of voting are not negligible. The result is clear: the expected utility of voting is close to zero, there are costs involved, and the rational citizen should therefore abstain. That so many people do vote presents a paradox in rational choice theory.

Many solutions have been proposed - a concern to maintain democracy (Downs, 1957), a sense of duty (Riker and Ordeshook, 1968), the actions of group leaders or strategic politicians (Uhlaner, 1989; Aldrich 1993), and the minimax-regret hypothesis of extreme risk aversion (Ferejohn and Fiorina, 1974). None of these solutions has proven satisfactory, and the verdict of Mueller (1992) and Green and Shapiro (1994) that the paradox remains is valid.

We start from the formulation of Riker and Ordeshook. Their classic paper presented the decision to vote or abstain as depending on expected utility, which is a function of (1) the differential benefit, B, received from the success of a preferred candidate, (2) the probability, P, that the citizen's vote would be decisive, and (3) the costs, C, of voting. In the now-standard formulation, (BP) -C < 0; hence the paradox. Riker and Ordeshook presented evidence from survey results that B and P did correlate as predicted with the decision to vote (C was not estimated). Unfortunately from the strict rational choice perspective, this occurred in conjunction

with another factor, labelled Duty. It was with levels of Duty given that respondents were more likely to vote when the perceived benefits and the subjective probability of influence were higher. Voting behavior was heavily influenced by Duty. This term could include utility derived from complying with the "ethic of voting", from affirming allegiance to the political system or demonstrating one's own efficacy, from expressing a partisan preference, or even from the act of deciding or going to the polls. In short, packed into "Duty" were all the normative, ethical, and social considerations eschewed in models of strictly rational behavior (Barry, 1970: 19-23).

We accept, provisionally, that "duty" is a powerful determinant of turnout. We clarify this concept and explore how it affects voting. But we ask whether the propensity to vote is diminished when people are actually informed about the tiny probability of affecting election outcomes and are exposed to the rational choice model where individuals vote only if the expected utility of doing so exceeds the cost. Does knowledge about rational choice change voting behavior?

RESEARCH DESIGN

Only one other experiment has confronted this question. Brunk (1980) exposed 49 students in two tutorials of an introductory American politics course to a one-hour discussion of Downs's participation model, focusing on how to conduct a cost-benefit analysis of voting. A month later, these students and a control group answered a questionnaire about attitudes towards voting and the probability that they would vote in a future election. The students exposed to the rational model were less likely to agree with statements that "it is the duty of a good citizen to

vote" and that voting is important regardless of the odds against one's party and the number of other voters. They were also significantly less likely to expect to vote in the upcoming national election.

Why were the students less likely to vote? Brunk argues that "those who have discussed voting strategies realize that the chance they can change the outcome of any large scale election is minimal." (561). But there is at least one other possibility. The students may have reacted not to the information on the tiny probability of casting a decisive vote as such but rather to the presentation of a new framework within which people should attempt to increase their own utility, by ascertaining both benefits and costs. It could be that exposure to public choice erodes public spiritedness and induces selfishness (Kelman 1987).

Like Brunk, we examine whether exposure to the rational choice model decreases the propensity to vote. We do so through an experimental design that incorporates some major improvements over Brunk's study.

First, our sample is large. Questionnaires were administered to students in 10 classes at two universities, the Université de Montréal [Montreal] and the University of Western Ontario [Western]. The classes were in three different disciplines - political science, sociology, and economics. The total number of respondents was 1459. These individuals were not randomly selected, and so we must have recourse to other methods of analysis than those used in pure experiments, but we are able to explore a good deal of variance in attitudes and behavior.

Second, the design incorporated pre-tests, a panel structure, and control groups. Table 1 lays out the application of tests and stimuli. With this design we are able, notably, to separate any effects of exposure to the instrument (panel effects) from the stimulus (experimental effects).

There were five 'panel' groups where three questionnaires were administered. Two of these were treatment groups where students were subjected to a short lecture about the paradox of voting. There were also four control groups where only the post-election questionnaire was answered, and one treatment group which received only the post-election questionnaire.[2]

(TABLE 1 ABOUT HERE)

Third, our treatment groups were exposed to straightforward information about the rational model. This is in contrast to the Brunk study, where the tutorial leader not only outlined the model but "stressed that he was a non-voter" (553). Moreover, Brunk arranged a debate in his discussion groups, where students had to argue against the rational model. Our approach was more neutral - and one that would appear to provide a far less powerful stimulus. It consisted of a 10-12 minute lecture about the paradox of voting.[3] We began by saying that there is in political science an interesting paradox, which is that it is not clear why people vote. The paradox, we said, arises when economic notions of rationality are applied to politics. We then briefly outlined the costs and benefits to individuals of voting, stressing that any individual's vote can make the benefits accrue only if that vote is decisive, and that the probability of this occurring in a national election is extremely small. No precise probability was provided. The conclusion was that it appears irrational to vote, within this perspective, and the fact that most people do vote is a paradox that has led to a debate in political science about whether the theory has to be rejected or amended. Nothing in the presentation indicated a positive or negative bias towards the theory or the act of voting itself. Our goal was to determine whether the subjects

would be affected by simple exposure to the fact that one's vote is unlikely to make a difference, and to a framework within which individuals make such a calculation on a cost-benefit basis.

Fourth, we measured actual voting behavior, not intentions. The experiment took place during a national election campaign in Canada. The election was called on September 8, 1993, and the vote took place on October 25th. As Table 1 shows, the panel groups were administered three questionnaires, one in the second full week of the campaign (Q1), one in the fifth week, two weeks before the election (Q2), and the last in the week following the election (Q3). The other five groups were administered only one questionnaire, in the week after the election. In two of the three treatment groups, the presentation was followed immediately by the second questionnaire. The third treatment group answered only the post-election questionnaire.[4] In all cases, respondents provided information about their voting intentions, attitudes towards voting and real voting behavior.

Finally, the questionnaires included specific questions about three central items in the rational choice model: B, P, and C. In particular, our study is the first, as far as we can tell (see Green and Shapiro 1994, 55, 70) to directly ask people their perceived probability of casting a decisive vote. Information was also gathered on socio-demographic variables, general interest in politics and the campaign, and other "non-rational" considerations such as sense of civic duty. This should allow us to ascertain not only whether exposure to the rational choice model reduces turnout but also, if it does, through which mechanisms, that is through which perceptions and attitudes.

Our expectation is that exposure to the short lecture on the paradox of voting has a small marginal impact on the propensity to vote. We start with the assumption that the decision to vote

or not to vote is based mostly on considerations that have little to do with rational choice. Yet

we believe, like Grofman (1993), that rationality may play at the margin, and that students would

become somewhat less inclined to vote when they are informed that it may be rational not to

vote.

If such an impact does emerge, the next research question will be to determine how and

why it occurs. As indicated above, there are two main possibilities, which are not mutually

exclusive. First, the lecture could affect students' perceptions of either the perceived probability

of casting a decisive vote or of the costs of voting, or both.[5] The presentation did not provide

any specific estimate of P but it made the point that it was bound to be tiny, and it also indicated

that there are costs involved in voting - the time and effort spent in gathering information,

getting registered and going to the poll: perhaps some students had never seriously thought about

P or C.[6] Second, the presentation could induce students to abstain not because of rational

considerations as such, (that is because it reduced perceptions of P or increased those of C), but

rather because it decreased their sense of civic duty.

THE FINDINGS

Impact of the Presentation on Turnout

Our critical dependent variable is whether the respondent voted or not. The overall

turnout for all respondents was 68%, which is very close to the national rate of 70%. The

turnout in the three experimental groups was 70%, and it was 67% in all the control groups

combined.[7]

But of course the treatment and control groups were not alike. Despite our efforts to use classes that were similar, this was impossible, as we were constrained by our colleagues' willingness to provide access to their classes and to let us deliver the presentation on the paradox of voting. This multi-group design, as noted, opens up room for variation, and for a more realistic exploration of the factors conducive to voting, but it also requires that we control for other variables that may have affected turnout. These are both exogenous and endogenous to the experiment:

1. Political interest. The reported level of political interest is a major determinant of voting. In the whole sample, the average level of interest, on a four-point scale of 0 to 1, was .70, but it ranged from .48 (group 1) to .85 (group 2).

2. Being at Western. Among the students at this university, the turnout was much lower (59%) than at Montreal (85%). Several factors seem to explain this. The main reason may be registration on the electoral list. In Quebec, a new voters' list was prepared for the 1993 federal election, so students in Montreal did not have to register themselves; elsewhere, the electoral list was one made a year earlier, so students not on that list because of age or change of residence had to make the effort to register. Of our Montreal sample, 95% reported two weeks before the election that they were registered, compared to 81% of the UWO sample. As well, UWO has a higher proportion of out-of-town students for whom voting would be more awkward. Apart from this, there were factors peculiar to the election in Quebec that may have affected turnout there, especially the entry of a new, nationalist party, the Bloc Québécois.

3. Party identification. Other things being equal, respondents who feel some attachment to a

political party should be more likely to vote. Some 66% of the whole sample indicated they felt close to some party.

4. Previous voting. We suppose that there is an element of habit or of learning in voting, so those respondents who had voted previously would be more likely to do so in this election. Some 71% of the respondents had voted before, most in the 1992 Canadian referendum on the constitution.

5. Panel sensitization. Respondents in five of the groups were exposed to three questionnaires, two during the campaign. The rest answered only the post-election questionnaire. Turnout was higher among the panel groups (71%) than among the other groups (64%). The experience of filling out questionnaires about voting and the current election seems to sensitizes respondents to politics and they are more likely to vote.[8]

Table 2 presents the results of the basic multivariate analysis.[9] Each of the variables has the expected sign and is significant. The most important result is that the treatment does seem to have had an impact on voting behavior. Everything else being equal, presenting a short, neutral lecture on the paradox of voting reduced turnout by 7 percentage points, a difference that is significant at the .05 level.

(TABLE 2 ABOUT HERE)

Clearly, being exposed to a model in which the costs and benefits of voting are calculated explicitly, and in which the probability of affecting the electoral outcome is shown to be very small, did not lead most respondents to change their behavior. The paradox of voting remains.

Nevertheless, the impact of the lecture is far from negligible. The overall turnout rate in our experimental groups was 70%. The data suggest that the rate would have been 77% had these students not been exposed to the rational choice model.[10] It would thus seem that appreciation of the rational model, even when conveyed only in a very short lecture, can lead to behavior that accords with its precepts.[11]

The results reported in Table 2 are from data from all respondents (more precisely, from all those for which we had information on all variables). We may also confine ourselves to respondents in the panel groups. This allows us to take one more variable into control - the respondents' ex ante perceived probability of voting. The findings are presented in Table 3. The first two columns of this table present regression equations that have as the dependent variable the perceived probability of voting in the election. This was indicated by an item on Q2, which was administered two weeks before election day. The second two columns have actual reported voting behavior as the dependent variable.

(TABLE 3 ABOUT HERE)

The new independent variable is the respondent's initial perceived probability of voting, as indicated on Q1, administered two weeks after the campaign began. The regression equation in column one shows that this ex ante probability of voting is a strong and highly significant predictor of the same probability assessed later in the campaign. But the rational choice presentation significantly reduced subjects' expectations that they would vote (as shown in columns one and two). This effect was immediate, for Q2 was administered right after the

presentation.

The regression equation in column two introduces the same control variables used in Table 2. Again, the presentation has a significant negative effect on expected voting behavior. Although they all remain significant (with the exception of party identification), the effect of each of the other variables is weaker than in the Table 2 regression, because some of their impact was incorporated in the ex ante estimation of the probability of voting.

And the impact of the presentation was enduring. In column four, the magnitude of the coefficient on presentation reveals an impact on turnout comparable to the one estimated for the whole sample, as well as to the immediate effect on vote intention. So these data show that the rational choice presentation had an impact on turnout that was independent of ex ante intentions. In sum, the presentation changed both immediate voting intentions and later voting behavior.

Explaining the Impact: The Rational Model

The next stage in the analysis is to investigate how the lecture affected respondents. First, we wish to determine if turnout decreased because it reduced P or increased C. We also want to examine the potential impact on a host of "non-rational" attitudes that may predispose people to vote. For each factor, we are interested in two questions. Did the presentation produce a change in the factor? Does that factor have a significant impact on the decision to vote? A given factor will be deemed to explain at least part of the impact of the lecture on voting only if two conditions are fulfilled: the factor was influenced by the presentation and it had an independent effect on the propensity to vote.

In Table 4, we present a summary of regression results showing the effect of the presentation on the 'rational model' factors. The data are the coefficients on the dummy variable 'presentation', which took a value of 1 for those who heard the short lecture and 0 for all others. The benefits and probability variables each have two measures, because Canadian elections take place in a parliamentary system. Voters choose a candidate to represent their local constituency, but the results simultaneously produce a choice of national government because the party with the largest number of seats normally forms that government. Voters have stakes in both outcomes. Some regard local candidates and the local outcome as most important; others regard the country-wide party contest as most important: most find a blend of significance in the two inter-related results. Similarly, voters have some probability of casting the decisive vote in their own riding (which had average populations of 102,000 in Ontario and 92,000 in Quebec). The probability of casting the decisive vote in the 'national' election is much smaller: the two leading parties would have to have won an equal number of seats and the voter would have to be decisive in her constituency.[12] We had several measures of the cost of voting. But one question was directed only to those who did not vote, and was asked after the election; another concerned how difficult it was to become registered, and so was answered only by some respondents. The best indicator was the response to another question, "How difficult do you think it would be for you to go and cast your vote?" Unfortunately, this item was asked only on Q2.

(TABLE 4 ABOUT HERE)

We use three separate tests of the effect of the presentation. One involves the total pool

of subjects; the other two are restricted to panel respondents who answered all three

questionnaires. As the coefficients in Table 4 show, for all tests the presentation had no effect

on the 'stakes' of the election - on the perceived importance to the respondent of the outcome at

either the constituency or the local level.[13] This would be expected: exposure to the model

should not change B. On the other hand, the presentation reduce the perceived probability of

casting a decisive vote and also increased the perceived cost of voting.

But do these factors affect the decision to vote ? The answer is found in Table 5, in

which voting behavior is the dependent variable. The only factors in the rational model that

significantly affect the propensity to vote are the anticipated benefits of the outcome at the

national level and the cost of voting.

(TABLE 5 ABOUT HERE)

The other factors - most notably the probability of casting the decisive vote - have an

insignificant impact, and in one case (the national probability) the sign is contrary to the model's

prediction.[14] Since the presentation had an impact on perceived probabilities but none on the

benefits, the only rational model factor through which it could have affected voting behavior was

the perceived costs of voting. This could have been because the presentation mentioned specific

costs of voting, like the time and effort spent getting registered and going to the polls, or because

the general concept of cost was introduced into the voting context. Note, however, that cost can

account for only a tiny part of the presentation's impact on turnout. The presentation appears to

have increased C by 0.03, an increase that would produce a decline of only one percentage point

in turnout (0.03 X 0.39). Exposure to the rational-choice model affects students' voting

behavior. But the effect on the variables central to the standard model of rational voting is very

small. So, how was it that information about this model changed students' voting behavior?

Explaining the Impact: Other Factors

We now turn to a broader range of factors that are associated with voting. They tap the

social and ethical underpinnings of the norm of voting. We also included one item that tests the

minimax-regret hypothesis; that is, the suggestion that if individuals are extremely risk-adverse,

it could be rational to vote in order to eliminate the possibility of immense regret if their

candidate loses by one vote (Ferejohn and Fiorina, 1974).

The list of fifteen attitudinal variables we employed is found in the Appendix. Each item

was included on all three questionnaires. In Table 6 are displayed the coefficients on

'Presentation' from regression equations in which the dependent variable is the respondent's

answer to each of these items. Once more, three different tests are used. In column 1, we

present coefficients showing the impact of the presentation when all respondents are pooled. In

columns 2 and 3, the impact is shown for those in the panel groups, with two different kinds of

controls.

(TABLE 6 ABOUT HERE)

The presentation affected a number of attitudes toward voting. Every change was in the

direction expected, and many were significant. We take this to be strong evidence that exposure to the rational choice perspective can induce change in peoples' attitudes. The presentation reduced acceptance of simple normative reasons for voting (Important, Duty, Democracy, Guilty). It diminished perceived social pressure to vote (Family, Friends). It reduced the perceived pleasure and ease of voting (Interesting, Easy). It reduced acceptance of a classic argument about obligation and consent in a democracy (Criticize), and also of the notion that ordinary people need to participate in order to guard against narrow interests (Special Interests). It diminished the sense of efficacy as expressed through voting (Many Vote, People Like Me). On the other hand, the lecture does not seem to have increased cynicism (No Change, Politicians) nor is there a clear effect on minimax regret.

Two things are remarkable about these effects. First, they were enduring. The attitudinal measures are taken from Q3, which was filled out at least three weeks after the short presentation. Second, the effects were indirect. At no time did the presentation make any reference to the considerations tapped by these attitudinal questions. It was entirely restricted to a cost-benefit analysis of voting, and to the paradox that arises in the rational-choice approach because of the fact that most people do vote. There was no speculation whatsoever about why people vote, and in a neutral fashion the talk ended with the suggestion that the theory might have to be modified or discarded. Hence it was the framing of the voting act in rational choice terms that had the attitudinal impact demonstrated here.

Before proceeding to examine the extent to which these attitudes determine voting behavior, and how, therefore, the rational choice presentation affected turnout, it is necessary to analyze further the structure of attitudes tapped by the questions. Table 7 presents a factor

analysis of responses to these fifteen items. They resolve into three factors. The first we label "duty" because the items that load heavily on it imply that voting is an obligation. The second factor is clearly distilling the social pressure to vote, from both friends and family. Here, the sense of guilt from not voting shows up as well, though this item loads to the same extent on the first factor - generalized duty. The third factor we label as "Cynicism", because the items that load most heavily on it imply either that political actors have no ideals or that the system will not change whether people vote or not.

(TABLE 7 ABOUT HERE)

From the items that load most heavily on the Duty, Pressure, and Cynicism factors, we constructed simple additive indexes. Then we ran regressions to assess the effect of the presentation on these measures. Using the same control variables as in Table 6, the result was that the presentation affected respondents' scores on Duty and Pressure but not on Cynicism.[15] The final step was to assess whether these factors have an independent impact on turnout. Table 8 shows the results when the decision to vote is regressed against the most relevant factors, both 'rational' and attitudinal.

(TABLE 8 ABOUT HERE)

These results suggest that neither perceived social pressure nor the sense of cynicism has a significant bearing on the decision to vote. Duty, on the other hand, has a substantial and highly

significant effect on voting. In our view, this factor represents the unquestioned, value-laden, normative aspect of voting, and subjects who score high on this index share a widely held view that citizens in a democracy simply should go to the polls and exercise their franchise. This factor is mitigated by the cost of voting, however, a variable that remains significant. Also significant are the benefits associated with the national election (as measured by the question about how "important" it is, "to you, personally" which party wins). It is interesting, though, that the strength of this factor was substantially reduced (from the value reported in Table 5) when it was combined with the attitudinal factors.[16]

We are now able to specify how the rational choice presentation worked. The effect on turnout was to depress it by about seven percentage points. Taking first the 'rational' factors, the presentation had no effect on B, and although it did significantly depress the subjects' perceptions of P, the latter variable did not affect voting behavior. The presentation increased C, as perceived by the subjects, by 0.03 (Table 2), and C in turn had a coefficient of -0.39 on turnout (Table 8). Hence the impact of the presentation on voting, through this channel, is about one percentage point (0.03 X 0.39). As for 'non-rational' factors, the presentation did decrease perceived social pressure but the latter was not related to voting. Instead, Duty is the key element. The presentation decreased scores on Duty by 0.05 (see note 16) and Duty's coefficient on turnout was 0.65 (Table 8). The impact of the presentation through this channel, Duty, is thus more than three percentage points (0.05 X 0.65). We may therefore conclude that the main reason the presentation reduced turnout is that it induced some students to question whether they really had a moral obligation to vote.

It would thus seem that the presentation modified the very definition of the act of voting.

The decision to vote was portrayed as a decision taken by individuals, not by members of a community or citizenry. It was also portrayed as questionable, as something reasonable people could contemplate not doing. This was not done directly: the presentation did not say whether voting was good or bad and was silent on the values that may underpin voting. But when we framed the act of voting in cost-benefit terms, some subjects were led to question whether they should feel obliged to vote.

DISCUSSION

It would not do to press these results too hard. The respondents were not selected randomly; instead, they are students in their first year of university, and because of their education and youth they are hardly representative of all voters. Our results are for one election only, and like all contests this one had some unique features. In exploring the impact of the presentation and of other factors associated with voting, the analysis has concentrated for the most part on small effects, on minor inflections in behavior and attitudes. There is always the risk of false precision in such exercises, and of drawing grandiose conclusions.

Nevertheless, our respondents were drawn from two universities in provinces with rather different political cultures. The experiment did not involve artificial situations and hypothetical events, but a genuine election campaign with real voting. The sample used was much larger than that typical of voting experiments, and it was large enough that the defects of non-random selection could be circumvented by statistical controls. Most important, our results are robust. The coefficients may be small, but we have not been able to get rid of them. The same effects

show up whether we analyze the entire population or only those in the panel groups. The signs are consistent. Standard statistical technology has produced a result that is small but significant, and to us the theoretical significance of the experiment is very great indeed.

What do our findings imply about the capacity of the rational choice model to explain why people vote? On the one hand, the fact that a ten-minute exposure to the model induced an appreciable percentage of students not to vote indicates that the model certainly is not irrelevant. This important result should interest those who are concerned about the consequences of rational choice per se for community values (Kelman, 1987). If the model had been perceived to be irrelevant by everyone, presumably it would have had no impact on turnout.

On the other hand, and more fundamentally we believe, our results tend to invalidate the rational choice model. First, even after exposure to the model, most students voted. Second, the fact that presentation of the model reduced turnout shows that students generally do not think in terms of benefits and costs, as assumed by the model. Students in our experimental groups voted in smaller numbers only because they were placed in a situation where they were induced to think about the benefits and the costs of the action. Third, it seems that non-voting was caused mainly by the presentation's effect on a factor exogenous to the rational model - Duty - rather than by its heightening the subjects' awareness of the key rational variables, P and C. Fourth, our results show that P, a crucial element of the rational model (and the one that most clearly distinguishes it from alternative explanations of voting) is not related to the decision to vote or to abstain.

Basically, then, our findings support a model in which voting, for most people, is an unreflective and habitual act, based primarily on a sense of duty. We surmise that the great

majority of citizens neither contemplate nor calculate costs and benefits when they think about going to the polls.

The conclusion need not be, however, that the rational choice model ought to be entirely discarded. As Grofman (1993) and Green and Shapiro (1994) point out - and as we have shown - this model has some marginal power: in some situations, some people do take into account expected benefits and costs. On this score, our findings are intriguing. More research is needed to ascertain whether they are specific to this study's sample and experimental conditions or whether they can be generalized to larger segments of the population.

Overall, the verdict must be that the paradox of voting remains. If we accept, however, that the decision to vote or not to vote depends mostly on 'irrational' factors but also partly on the calculus of expected costs and benefits, then we need sharp empirical analyses, experimental and non-experimental, that directly test the relevance of B, P and C, while controlling for the effect of other factors. We hope our study makes a contribution to that effect.

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NOTES

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2. There was an eleventh group, an economics class at Western that was an experimental group. However, in this class the questionnaires and the experimental stimulus had to be delivered after the instructor's lecture rather than before it or in the middle of it, as was the case in the other classes. Many students left, and those who filled out the questionnaires were too obviously self-selected to be included in the analysis.

3. These lectures were written and were identical in the two universities. They are available from the authors.

4. Since students did not necessarily attend all classes, not all members of the panel groups filled out all three questionnaires. Hence we have three pools of subjects: (1) the total pool - everyone who filled out at least one questionnaire; (2) the broad panel - everyone in any panel group who filled out at least one questionnaire; (3) the narrow panel - everyone in any panel group who filled out all three questionnaires. In the analysis, panel respondents refer to the narrow panel. Numbers of respondents vary further because some questions were included in only one or two questionnaires: analysis of voting behavior, for instance, is restricted to those who filled out questionnaire 3.

5. We do not expect the lecture to influence B, which we define as what the individual would gain from having her preferred candidate or party win rather than lose. We assume this is the kind of information voters are exposed to in campaigns.

6. With respect to P, Cyr (1975, 28) reports that he "tried in vain to establish evidence of subjective electoral probability. For example, informal probes of some graduate students and faculty of departments of political science and sociology at two well-known universities failed to uncover anyone who used such psychological processes."

7. This result is based on 976 respondents: it excludes 470 students who answered Q1 or Q2 but not Q3, and 13 others who refused to indicate whether they had voted. There is no evidence of mortality bias in the panel groups. Those students who did not respond to the post-election questionnaire did not differ from the others with respect to their interest in politics or their ex ante probability of voting. If absence from these classes was not random, it was orthogonal to the dimensions explored here.

   We are dealing with reported turnout, as we had no way of verifying whether respondents

actually voted. Turnout, however, does not seem to have been over-reported by our respondents (turnout among students tends to be only slightly lower than average in Canada: see Pammett 1991, 40). This is both because the response rate was very high and because the incentive to misreport is smaller in a self-administered questionnaire than in interviews (Sudman and Bradburn 1987, 277; Dillman 1978, 62-63). It should be noted, finally, that students were instructed not to fill out the questionnaires if they were not eligible to vote.

8. Clausen (1968) found that those who are interviewed during an American presidential election campaign reported a turnout 6 percentage point higher than those interviewed after the election. Similarly, Granberg and Holmberg (1992) indicate that the turnout of those interviewed during a Swedish campaign was 95%, compared to 93% for those interviewed after the election.

9. These are OLS regressions. In all cases where the dependent variable is a dummy variable, we also ran LOGIT regressions. The results were very similar, and so we present the OLS results for ease of presentation.

10. This means that 9% (7% of 77%) of those who would have gone to vote decided to abstain after hearing the presentation.

11. The reason overall turnout was not lower in the experimental groups is that students in them were more likely to be panel respondents (two of the three experimental groups were panels) and tended to have a greater interest in politics (two of the three experimental groups were political science classes). When we control for these factors, turnout is lower in those groups exposed to the presentation.

Two other results are worth noting. First, having voted in a previous election (or referendum) substantially increased the probability of voting in this election, even controlling for political interest and party identification. There must be an habitual component in voting, or a learning effect. Second, turnout was 12 percentage point higher in the panel groups. This could be caused by sensitization to the election. Being asked about the election could also reinforce the social desirability of voting: as Greenwald et al. (1987) have shown, asking people whether they expect to vote increases the probability that they will do so. Our panel effect may seem larger than that reported for Sweden by Granberg and Holmberg (1992). As they point out, however, taking the 93% turnout among their post-election interviewees as a baseline, the campaign interview induced about one third of non-voters to vote.

12. These two probabilities were briefly discussed in the presentation. It was pointed out that each depends on how close the race is, and that voting behavior should depend on the subjective estimation of how close is the race. Apart from this, students were told only that the probabilities must be "very small", "tiny", and "infinitesimal".

13. These were not identical: the correlation between them was .5.

14. We explored interactive models using B and P or the perceived closeness of the the national and cosntituency contests, with no significant results.

15. For Duty, Pressure, and Cynicism, respectively, the coefficients for the dummy variable Presentation were -.05, -.05, and +.03 respectively (these equations are based on the total pool of respondents). The coefficient for Cynicism is not statistically significant at the .05 level.

16. It is also noteworthy that in this equation the coefficient on Presentation was -.02 and not significant. We ran two other regressions worth reporting. First, we took as the dependent variable the probability of voting as indicated on Q2: the only significant explanatory variables were the cost of voting, the benefits and the duty index (all significant at the .001 level). Second, we took voting as the dependent variable, and used explanatory variables as measured on Q2: again, cost, benefits, and duty were significant (at the .01 level). In both cases, the coefficient on Presentation was tiny and insignificant. This shows that these intervening variables explain the effect of the presentation.

Table 1. The Research Design

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10
Location	Montreal	Montreal	Montreal	Montreal	Montreal	Western	Western	Western	Western	Western
Course	Socio	Politics	Econo	Econo	Politics	Politics	Politics	Politics	Econo	Econo
Design:										
Questionnaire 1 (early campaign)	O_1 (155)	O_1 (121)				O_1 (280)	O_1 (220)		O_1 (67)	
Presentation		X		X		X				
Questionnaire 2 (late campaign)	O_2 (142)	O_2 (97)				O_2 (224)	O_2 (192)		O_2 (70)	
Questionnaire 3 (post-election)	O_3 (134)	O_3 (67)	O_3 (50)	O_3 (35)	O_3 (46)	O_3 (189)	O_3 (156)	O_3 (118)	O_3 (49)	O_3 (145)
Panel	(99)	(51)				(113)	(94)		(38)	

The numbers in parentheses indicate the number of students who answered the questionnaire.
Panel numbers show how many respondents in each class answered all three questionnaires.

Table 2. The Impact of the Presentation on Turnout: All Respondents

Presentation	—.07 (.04)**
Past Vote	+.25 (.03)***
Party Attachment	+.13 (.03)***
Western	—.25 (.03)***
Political Interest	+.21 (.06)***
Panel	+.12 (.03)***
Constant	+.39 (.05)***
R^2	.18
N	848

The dependent variable is whether the respondent voted (1) or not (0). PRESENTATION, PAST VOTE, WESTERN, and PANEL are dummy variables that take the value of 1 for those who were given the presentation on the paradox of voting, who had voted in a previous election or referendum, who attended the University of Western Ontario, and who had answered a campaign questionnaire, respectively. POLITICAL INTEREST takes the value of 0 for those who said politics interests them "not at all", .33 for those who answered "not much", .67 for those indicating "somewhat", and 1 for "very much". PARTY ATTACHMENT takes the value of 1 for those who said they usually identify with a party, and 0 for those who said they did not identify with a party or who gave a "don't know" response.

Table entries are regression coefficients; standard errors are shown in parentheses.

* significant at the .10 level (one-tailed test)
** significant at the .05 level (one-tailed test)
*** significant at the .01 level (one-tailed test)

Table 3. The Impact of the Presentation on Turnout:
Panel Respondents

	Probability of Voting (Wave 2)	Probability of Voting (Wave 2)	Voted (Wave 3)	Voted (Wave 3)
Presentation	—.05 (.02)**	— .07 (.02)***	—.07 (.04)**	—.07 (.04)**
Probability of Voting (Wave 1)	+.72 (.04)***	+.64 (.05)***	+.76 (.08)***	+.68 (.09)***
Past Vote		+.08 (.03)***		+.10 (.05)**
Party Attachment		+.03 (.02)*		+.05 (.04)
Political Interest		+.13 (.04)***		+.11 (.08)*
Western		—.06 (.02)***		—.21 (.04)***
Constant	+.24 (.04)***	+.18 (.04)***	+.11 (.07)*	+.14 (.08)**
R²	.41	.45	.18	.25
N	387	380	392	385

PROBABILITY OF VOTING is the respondent's perception of his/her likelihood of voting on a scale of 0 to 10 where 10 means it is certain that he/she will vote, 0 means it is certain that he/she will not vote, and 5 means that the chances are 50-50 that he/she will vote. The scale was transformed to 0 to 1. All other variables are the same as in Table 2.

Table entries are regression coefficients; standard errors are shown in parentheses.

* significant at the .10 level (one-tailed test)
** significant at the .05 level (one-tailed test)
*** significant at the .01 level (one-tailed test)

Table 4. The Impact of the Presentation on the Components of the Calculus of Voting

	All Respondents	Panel Respondents	Panel Respondents
Benefits: Riding	+.00 (.02)	+.03 (.03)	+.01 (.03)
Benefits: Canada	—.02 (.02)	+.01 (.02)	—.02 (.02)
Probability: Riding	—.06 (.02)***	—.08 (.03)***	—.08(.03)***
Probability: Canada	—.02 (.02)	—.05 (.02)**	—.05 (.02)**
Cost	+.03 (.02)*		

BENEFITS "RIDING" indicates how important it is to the respondent, on a scale of 0 to 10, which candidate wins the election in his/her riding. BENEFITS "CANADA" indicates how important it is which party wins the election in Canada. The two scales were transformed to 0 to 1. PROBABILITY indicates the perceived chances that one's vote would determine which candidate wins in one's riding and which party wins in Canada. PROBABILITY was transformed to a 0 to 1 scale. COST was tapped by the question "How difficult would it be for you to go and cast your vote?". It took the value of 0 for "very easy", .33 for "easy", .67 for "difficult", and 1 for "very difficult". The findings are extracted from regressions in which the dependent variable is regressed against PRESENTATION and other control variables. The entries indicate the regression coefficient and, in parentheses, the standard error for PRESENTATION. Column 1 includes all respondents; the control variables are those listed in Table 2. Columns 2 and 3 pertain only to those respondents who answered each of the three questionnaires. Column 2 includes as control variables the same variable measured in wave 1; column 3 includes as well the four control variables listed in columns 2 and 4 of Table 3. COST is included only in column 1 because the question measuring the cost of voting was posed only in the second questionnaire.

*   significant at the .10 level (one-tailed test)
** significant at the .05 level (one-tailed test)
*** significant at the .01 level (one-tailed test)

Table 5. Benefits, Costs and the Decision to Vote or Not to Vote

Benefits: Riding	+.08 (.10)
Benefits: Canada	+.44 (.11)***
Probability: Riding	+.02 (.11)
Probability: Canada	—.08 (.14)
Cost	—.39 (.10)***
R^2	.23
N	283

The findings are extracted from a regression which also includes all the variables included in Table 2. Table entries are regression coefficients; standard errors are shown in parentheses.

*** significant at the .01 level (one-tailed test)

Table 6: The Impact of the Presentation on Attitudes Toward Voting

	All Respondents	Panel Respondents	Panel Respondents
Easy	—.04 (.03)*	—.03 (.03)*	—.04 (.03)*
Criticize	—.07 (.03)***	—.04 (.03)*	—.04 (.03)*
Important	—.06 (.02)***	—.04 (.02)**	—.04 (.02)**
Interesting	—.05 (.02)***	—.03 (.02)*	—.03 (.03)
No Change	—.00 (.02)	—.00 (.02)	+.01 (.03)
Family	—.05 (.03)**	—.01 (.02)	—.04 (.03)*
Friends	—.06 (.02)***	—.02 (.02)	—.04 (.02)**
Special Interests	—.06 (.02)***	—.05 (.03)	—.08 (.03)**
Duty	—.06 (.02)***	—.04 (.02)	—.03 (.02)*
Democracy	—.01 (.02)	—.02 (.02)	—.02 (.02)
Many Vote	+.08 (.02)***	+.09 (.02)	+.10 (.03)***
Guilty	—.07 (.03)***	—.04 (.03)	—.05 (.03)**
People Like Me	—.03 (.02)**	—.01 (.02)	—.01 (.02)
Politicians	+.01 (.02)	—.01 (.02)	+.01 (.02)
One Vote	+.01 (.02)	+.05 (.02)**	+.03 (.03)

The findings are extracted from regressions in which the dependent variable is regressed against PRESENTATION and other control variables. The entries indicate the regression coefficients and, in parentheses, the standard error for PRESENTATION. Column 1 includes all respondents; the control variables are those listed in Table 2. Columns 2 and 3 pertain only to those who answered each of the three questionnaires. Column 2 includes as a control variable the same variable measured in wave 1; column 3 includes as well the control variables listed in columns 2 and 4 of Table 3. All the dependent variables were transformed to a 0 to 1 scale. See the Appendix for a description of attitudinal variables.

*   significant at the .10 level (one-tailed test)
**   significant at the .05 level (one-tailed test)
***   significant at the .01 level (one-tailed test)

Table 7. The Structure of Attitudes Toward Voting

	Factor 1 Duty	Factor 2 Pressure	Factor 3 Cynicism
Duty	.78	.21	—.27
Important	.70	.11	—.43
Democracy	.69	.11	—.24
People Like Me	.67	.10	—.25
Special Interests	.57	.26	.07
Criticize	.57	.22	—.12
Easy	.56	.19	—.01
One Vote	.54	.38	—.35
Interesting	.50	.22	—.39
Friends	.18	.87	—.08
Family	.24	.87	—.03
Guilty	.59	.60	—.32
Politicians	.01	—.10	.72
No Change	—.34	—.07	.67
Many Vote	—.33	—.06	.67
Eigenvalue	4.60	1.61	1.31
% of Variance Explained	30.7	10.7	8.7

Table entries are factor loadings. "Don't know" responses were given a score of .5 so as to maximize the number of cases.

Table 8. Benefits, Costs, Attitudes and the Decision to Vote or Not to Vote

Benefits: Canada	+.26 (.09)***
Cost	—.39 (.09)***
Index: Duty	+.65 (.13)***
Index: Pressure	—.01 (.08)
Index: Cynicism	—.03 (.11)
R^2	.29
N	357

The findings are extracted from a regression which also includes all the variables included in Table 2. Table entries are regression coefficients; standard errors are shown in parentheses. The indexes are composed of the following questions: DUTY: Duty, Democracy, Important; PRESSURE: Family, Friends; CYNICISM: Politicians, No Change, Many Vote. The index corresponds to the mean score obtained in the questions making up the index. "Don't know" responses were given a score of .5.

*** significant at the .01 level (one-tailed test)

Appendix: Attitudinal Variables

Attitudes toward voting were tapped through a series of questions asking respondents whether they agreed strongly, agreed, disagreed, or disagreed strongly with the following statements.

Easy: It is so easy to vote that I don't see any reason not to.

Criticize: People who don't vote have no right to criticize the government.

Important: It is important to vote, even if my party or candidate has no chance of winning.

Interesting: It's interesting to vote.

No Change: Whoever wins the election, nothing will change.

Family: If I did not vote, my family would think badly of me.

Friends: If I did not vote, my friends would think badly of me.

Special Interests: If people like me didn't vote, special interests would come to control the government.

Duty: It is the duty of every citizen to vote.

Democracy: In order to preserve democracy, it is essential that the great majority of citizens vote.

Many Vote: So many people vote that my vote means hardly anything.

Guilty: If I did not vote, I would feel guilty.

People Like Me: My own vote may not count for much, but if all the people who think like me vote, it could make a big difference.

Politicians: Politicians are willing to say anything to get elected.

One Vote: I would feel terrible if I didn't vote and my candidate lost by one vote.

Those who agreed strongly were given a score of 1, those who agreed a score of .67, those who disagreed a score of .33, and those who disagreed strongly a score of 0.