Public Choice **99:** 39–55, 1999.

Why do people vote? An experiment in rationality*

ANDRÉ BLAIS[1] & ROBERT YOUNG[2]
[1]*Département de Science Politique, Université de Montréal, C.P. 6128, Succ. Centre-Ville, Montréal, Canada H3C 3J7; e-mail: blaisa@ere.umontreal.ca;* [2]*Department of Political Science, University of Western Ontario, London, Canada N6A 5C2*

Accepted 15 May 1997

Abstract. The study presents the findings of an experiment conducted during the 1993 Canadian fedeal election campaign. Students in two universities were exposed to a ten-minute presentation about the rational model of voting and the 'paradox' that so many people vote when it is apparently irrational on a cost-benefit basis. Our data indicate that exposure to the presentation decreased turnout in the election by seven percentage points. This result contributes to the debate abut the effect of rational-choice models on real political behavior. More important, the experimental panel data permit the presentation's effect to be decomposed, and this helps explain why people do vote. In this study, turnout was reduced mainly because the presentation diminished the respondents' sense of duty, an effect that was indirect, because there was no reference in the presentation to such motives. Framing the voting act in rational-choice terms induced some students to reconsider whether they should feel obliged to vote.

1. Introduction

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

* We are grateful to Robin Bade, J.M. Jasiak, Doug Long, Fernand Martin, Alain Noel, Michael Parkin, Ted Schrecker, Jean Philippe Thérien, Robert Vandycke, and Ron Wintrobe. We also thank Miriam Lapp, Christopher Fleury, Martin Turcotte, and Cristine de Clercy for research assistance, and Bill McCelland for ethical help. This research was supported by the Social Sciences and Humanities Research Council of Canada and the Fonds pour la Formation de Chercheurs et l'Aide à la Recherche.

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 (1989) 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, in conjunction with other determinants of the voting act. But further, through an experiment in which potential voters were exposed to the rational-choice account of the expected utility of voting, we are able to determine whether exposure to such concepts affects voting behavior.

2. 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 (1980: 561) argues that "those who have discussed voting strategies realize that the chance they can change the outcome of any large scale election is minimal." 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.

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 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.[1]

Third, our treatment groups were exposed to straightforward information about the rational model. This is in contrast to the Brunk (1980: 553) study, where the tutorial leader not only outlined the model but "stressed that he was a non-voter." 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.[2] 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

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	O_1	O_1				O_1	O_1		O_1	
(early campaign)	(155)	(121)				(280)	(220)		(67)	
Presentation		X		X		X				
Questionnaire 2	O_2	O_2				O_2	O_2		O_2	
(late campaign)	(142)	(97)				(224)	(192)		(70)	
Questionnaire 3	O_3	O_3	O_3	O_3	O_3	O_3	O_3	O_3	O_3	O_3
(post-election)	(134)	(67)	(50)	(35)	(46)	(189)	(156)	(118)	(49)	(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.

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 8 September 1993, and the vote took place on 25 October. 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.[3] In all cases, respondents provided information about their voting intentions, attitudes towards voting and real voting behavior.

Finally, the questionnaire 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 on a wide range of attitudinal – or "non-rational" – considerations such as sense of civic duty, cynicism, and social pressure. This allows us to ascertain whether exposure to the rational-choice model reduces turnout, and also, if it does, to analyze how the effect occurred. This secondary analysis can help explain why people do turn out to vote.

3. The impact of the presentation on turnout

Our expectation was that exposure to the short lecture on the paradox of voting would have a small marginal impact on the propensity to vote. We began 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 thought, like Grofman (1993), that rationality might play at the margin, and that students would become somewhat less inclined to vote when informed that it may be rational not to vote.

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.[4]

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 conductive to voting, but it also requires controls 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 Western sample. As well, Western 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 seemed to sensitize respondents to politics and they were more likely to vote.[5]

Table 2. The impact of the presentation on turnout: All respondents

Variables	Logit coefficient	SD	Impact
Presentation	–0.42**	.21	–.07
Past vote	+1.21***	.18	+.24
Party attachment	+0.73***	.17	+.13
Western	–1.51***	.03	–.25
Political interest	+1.17***	.33	+.21
Panel	+0.66***	.18	+.12
Constant	–0.44	.29	

Adjusted pseudo R^2 = .30. Percent correct prediction = 73.70%. N = 848.

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

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.

For each variable, we have calculated the probability that each individual will vote under two scenarios, first assuming that the variable takes its lowest value, then assuming that it takes its highest value, all other variables remaining at their observed values. The reported impact is the difference between the two average probabilities, across the entire sample. See Rosenstone and Hansen (1995: 73).

Table 2 presents the results of the multivariate analysis. 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.

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. 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.[6] 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.[7]

This is a stubborn effect. We conducted further analysis, seeking to eliminate it. First, confining ourselves to the panel respondents, one more variable was incorporated – the respondents' *ex ante* perceived probability of voting, as indicated on Q1 (administered two weeks after the election campaign began). This was a strong predictor of the same probability later in the campaign, and of actual voting. Buth the short presentation significantly reduced the expectations of panel respondents that they would vote, as measured on Q2, administered right after the presentation. Second, the presentation's effect was found to be enduring. Among panel respondents, with a full set of controls, including the *ex ante* probability of voting, the coefficient on Presentation reveals an impact on later voting behavior that was comparable to the one estimated for the whole sample. More important, this coefficient was the same as the one demonstrating the immediate effect of the presentation on the perceived probability of voting, as measured on Q2 (Blais and Young, 1996: Table 3). So the rational choice presentation had an impact that was independent of *ex ante* expectations. It changed both voting intentions and later voting behavior.

4. Explaining the presentation's impact

The next step is to investigate how the presentation affected the respondents' behavior. Here, as indicated above, there are two main possibilities, which are not mutually exclusive. First, the lecture could change the calculus of voting, that is, the students' perceptions of the perceived benefits of voting, of the probability of casting a decisive vote, or of the costs of voting, or some combination of these 'rational' factors. 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.[8] Second, the presentation could induce students to abstain not because of rational considerations as such, but rather because it changed their attitudes towards the meaning and significance of the voting act. It could have had an impact on a host of 'non-rational' factors that may predispose people to vote.

So we now explore these two sets of factors. In every case, we are interested in whether the presentation produced a change in the factor, and also whether that factor had a significant impact on the decision to vote. A factor can explain part of the impact of the presentation on voting only if it was altered

by the presentation as well as having an independent effect on the propensity to vote.

In Table 3, we present a summary of regression results showing the effect of the presentation on the factors central to the rational model of voting. The data are the coefficients on the dummy variable Presentation. The Benefits and Probability variables each have two measures, because Canadian elections take place in a parliamentary system. Some voters 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.[9] 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, while another concerned how difficult it was to become registered, and so was answered only by some respondents. The best indicator available 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.

As the coefficients in Table 3 show, 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.[10] This is to be expected: there is no reason why exposure to the model should change the B term. However, the presentation did much reduce the perceived probability of casting a decisive vote (at the riding level), and it also increased the perceived cost of voting. So these two factors could have accounted for some of the decrease in turnout.

We now turn to the 'non-rational' factors. The questionnaire included fifteen items that measured attitudes towards voting and motives for doing so. These questions were derived from the literature, and were designed to tap the ethical and social underpinnings of the norm of voting. Some also embody motives that have a reasoned component to them (even if these reasons would not stand up to the rational model of voting), and one item explores the minimax-regret hypothesis; that is the suggestion that if individuals are extremely risk-averse, it could be rational to vote in order to eliminate the possibility of immense regret if their candidate lost by one vote (Ferejohn and Fiorina, 1974). The list of questions is found in Table 4. Each item was included on all three questionnaires. Table 4 presents the coefficients and standard errors on

Table 3. The impact of the presentation on the components of the calculus of voting

	Regression coefficient
Benefits: Riding	+.00 (.02)
Benefits: Canada	–.02 (.02)
Probability: Riding	–.06 (.02)***
Probability: Canada	–.02 (.02)
Cost	+.03 (.02)*

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

BENEFITS "RIDING" indicates how important it is to the respondent, on a scale of 0 to 10, which candidate wins the election in her riding. BENEFITS "CANADA" indicates how important it is which party wins the election in Canada. The two scales were transformed to a range of 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 all the other variables included in Table 2. The entries indicate the regression coefficient on PRESENTATION, and, in parentheses, the standard error.

the (dummy) Presentation variable in OLS regression equations, where the dependent variable was the attitude as measured on Q3.

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, 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 did not seem to have increased cynical attitudes about politics (No Change, Politicians), nor was there a significant effect on minimax regret.

Table 4. The impact of the presentation upon attitudinal variables

Variable	Question	Regression coefficients
Easy	It is so easy to vote that I don't see any reason not to.	–.04 (.03)*
Criticize	People who don't vote have no right to criticize the government.	–.07 (.03)***
Important	It is important to vote, even if my party or candidate has no chance of winning.	–.06 (.02)***
Interesting	It's interesting to vote.	–.05 (.02)***
No change	Whoever wins the election, nothing will change.	–.00 (.02)
Family	If I did not vote, my family would think badly of me.	–.05 (.03)**
Friends	If I did not vote, my friends would think badly of me.	–.06 (.02)***
Special interests	If people like me didn't vote, special interests would come to control the government.	–.06 (.02)***
Duty	It is the duty of every citizen to vote.	–.06 (.02)***
Democracy	In order to preserve democracy, it is essential that the great majority of citizens vote.	–.01 (.02)
Many vote	So many people vote that my vote means hardly anything.	+.08 (.02)***
Guilty	If I did not vote, I would feel guilty.	–.07 (.03)***
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.	–.03 (.02)**
Politicians	Politicians are willing to say anything to get elected.	+.01 (.02)
One vote	I would feel terrible if I didn't vote and my candidate lost by one vote.	+.01 (.02)
Index		Impact
Duty		–.05 (.02)**
Cynism		+.03 (.02)*
Pressure		–.05 (.02)**

These findings are extracted from regressions in which the dependent variable is regressed against PRESENTATION and all the other variables included in Table 2. The entires indicate the regression coefficients and, in parentheses, the standard error for PRESENTATION. On each question, 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.

Two things are remarkable about these effects. First, they were enduring. The attitudinal measures are taken from Q3, which was filled out 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 do vote, and the talk ended in a neutral fashion 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 effect demonstrated here.

Before proceeding to examine the impact of these considerations on voting behavior, it is necessary to analyze further the structure of attitudes tapped by the questions. A factor analysis was conducted on the fifteen items, and they resolved themselves well into three factors. The first we label "Duty" because the items that load heavily on it – Duty, Important, Democracy – imply that voting is an obligation. The second factor clearly distilled the social Pressure to vote, from both friends and family. The third factor we label as "Cynicism", because the items that load most heavily on it – Politicians, No Change, Many Vote – imply either that political actors have no ideals or that the system will not change whether people vote or not. Further analysis employed simple, additive indexes constructed from the items that loaded most heavily on these three factors.[11]

The overall impact of the presentation on these three factors is indicated in the bottom panel of Table 4. As these data show, the presentation had a weak effect on Cynicism, increasing it. The presentation had stronger effects on the sense of Duty associated with voting and on the perceived social Pressure to vote: each was reduced substantially.

But do these factors in turn affect the propensity to vote? Our data allow such effects to be traced, and the answers are found in Table 5. Here, voting behavior is the dependent variable. Considering first the components of the rational model, the results show that the perceived probability of casting the decisive vote does not affect whether people voted. The perceived benefit of the electoral choice at the national level does have a significant effect on voting, and so does the anticipated cost of voting.[12] 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 small part of the presentation's impact on turnout. The presentation appears to have increased C by 0.03, an effect that would produce a decline in turnout of a little over one percentage point (.03 $\times$ –.46). Exposure to the rational-choice model did affect respondents' voting behavior. But only a small part of the effect seems to have been triggered by the variables central to the standard model of rational voting.

Table 5. The decision to vote or not to vote

Variables	Logit coefficient	SD	Impact
Benefits: Canada	+2.68***	.86	+.37
Probability: Riding	+.24	.76	+.03
Cost	–3.18***	.78	–.46
Index: Duty	+4.88***	1.14	+.72
Index: Cynism	+.84	1.07	+.09
Index: Pressure	–.06	.77	.00
Constant	–3.35**	1.47	

Adjusted pseudo R^2 = .51. Percent correct prediction = 82.94%. N = 299.

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

The findings are extracted from equations which also include as controls all the variables listed in Table 2.

Turning to the attitudinal factors, it is evident that neither perceived Pressure nor the degree 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 *should* go to the polls and exercise their franchise.

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, and C in turn had an effect on turnout. Through this channel, the impact of the presentation on voting is over one percentage point. As for 'non-rational' factors, the presentation did decrease perceived social pressure and it increased cynicism, but these factors were not related to voting. Instead, Duty is the key element. The presentation decreased scores on the duty index by 0.05 and Duty's impact on turnout was 0.72. So the impact of the presentation on turnout through this channel, Duty, is more than 3.5 percentage points. 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 for some respondents the presentation modified the very definition of the act of voting. In it, 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.

5. 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 those 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. If the model had been perceived to be irrelevant by everyone, presumably it would have had no impact on turnout. This important result should interest those who are concerned about the consequences of rational choice *per se* for community values (Kelman, 1987).

On the other hand, and more fundamentally we believe, our results tend to invalidate the "pure" 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, in part, only through having been 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 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.

Notes

1. 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 other classes. Many students left, and those who filled out the questionnaires were too obviously self-selected to be included in the analysis.
2. These lectures were written and were identical in the two universities. They are available from the authors.
3. 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, the term "panel respondents" refers to the narrow panel. In broader analyses, the 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.
4. 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.

5. Clausen (1968) found that those are interviewed during an American presidential election campaign reported a turnout 6 percentage points 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.
6. This means that 9% (7% of 77%) of those who would have gone to vote decided to abstain after hearing the presentation.
7. 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 points 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.
8. 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."
9. The Probability variables were measured by two items which presented a range of chances of casting the deciding vote locally and nationally – one in 100, one in 1,000, one in 10,000, and so on. These two probabilities were briefly discussed in the presentation. It was pointed out that each depends on how close the election 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".
10. These were not identical: the correlation between them was .5.
11. For details, see Blais and Young (1996: 14–15).
12. We also explored interactive models using B and P, with no significant results.

References

Aldrich, J.H. (1993). Rational choice and turnout. *American Journal of Political Science* 37: 246–276.

Barry, B. (1970). *Sociologists, economists and democracy*. London: Collier-Macmillan.

Blais, A. and Young, R. (1996). Why do people vote?: An experiment in rationality. Working Paper No. 64, Political Economy Research Group, University of Western Ontario.
Brunk, G. (1980). The impact of rational participation models on voting attitudes. *Public Choice* 35: 549–564.
Clausen, A.R. (1968). Response validity: Vote report. *Public Opinion Quarterly* 32: 588–606.
Cyr, A.B. (1975). The calculus of voting reconsidered. *Public Opinion Quarterly* 39: 19–39.
Downs, A. (1957). *An economic theory of democracy*. New York: Harper and Row.
Dillman, D.A. (1978). *Mail and telephone surveys: A total design method*. New York: Wiley.
Ferejohn, J. and Fiorina, M. (1974). The paradox of not voting: A decision theoretic analysis. *American Political Science Review* 68: 525–536.
Granberg, D. and Holmberg, S. (1992). The Hawthorne effect in election studies: The impact of survey participation on voting. *British Journal of Political Science* 22: 240–248.
Green, D. and Shapiro, I. (1994). *Pathologies of rational choice theory: A critique of applications in political science*. New Haven: Yale University Press.
Greenwald, A.G., Carnot, C.G., Beach, R. and Young, B. (1987). Increasing voting behaviour by asking people if they expect to vote. *Journal of Applied Psychology* 72: 315–318.
Grofman, B. (1993). Is turnout the paradox that ate rational choice theory? In B. Grofman (Ed.), *Information, participation and choice*. Ann Arbor: University of Michigan Press.
Kelman, S. (1987). "Public Choice" and Public Spirit: *The Public Interest* 87: 80–94.
Mueller, D.C. (1989). *Public choice II*. New York: Cambridge University Press.
Powell, G.B. (1982). *Contemporary democracies: Participation, stability and violence*. Cambridge: Harvard University Press.
Pammett, J. (1991). Voting turnout in Canada. In H. Bakvis (Ed.), *Voter turnout in Canada*. Toronto: Dundurn.
Riker, W.H. and Ordeshook, P.C. (1968). A theory of the calculus of voting. *American Political Science Review* 62: 25–43.
Rosenstone, S.J. and Hansen, J.M. (1993). *Mobilization, participation, and democracy in America*. New York: Macmillan.
Sudman, S. and Bradburn, N.M. (1987). *Asking questions: A practical guide to questionnaire design*. San Francisco: Jossey-Bass.
Uhlaner, C.J. (1989). Rational turnout: The neglected role of groups. *American Journal of Political Science* 33: 390–422.