Title:
Can Voting Aid Applications Mobilize Citizens?
A Field Experiment in a Low Income Neighborhood, in the Context of the 2014 Quebec Election

Author:
Valérie-Anne Mahéo
PhD Candidate
Political Science Department
McGill University

Paper presented at:
The workshop Vision in Methodology
Hamilton, Canada
May 20th-22nd, 2014

Abstract:
Across Western democracies, Internet and Voting Aid Applications (VAA) are increasingly used to inform and mobilize the public. However, these 'apps' and websites mostly preach to the converted. They are used by educated and interested individuals, while less educated and politically marginalized citizens do not know of their existence. Hence, we do not exactly know what is the full political potential of these online information tools. If these voting apps were made available to those most in need of information and mobilization, could they stimulate political attitudes and electoral participation? Using a randomized field experiment, in the context of the provincial electoral campaign in Quebec, in 2014, I evaluate whether the use of a VAA can have meaningful effects on political knowledge, interest, information seeking behavior and electoral behavior. This experiment innovates in the sense that it reaches an under-mobilized and under-researched section of the population: the socio-economically disadvantaged citizens.

One of the biggest challenges of modern western democracies is political inequality. The gap between the political 'haves' and the 'have not' is pervasive and even widening. Across developed democracies, citizens with lower levels of education participate less in politics (Rosenstone and Hansen 1993, Putnam 2000, Campbell 2006, Gallego 2010). Compared to citizens with higher socio-economic resources, the less advantaged citizens, and especially youth, tend to remain outside the realm of political decision-making processes and vote less (Verba, et al. 1995, Blais, et al. 2004).

We thus need to pay specific attention to lower educated citizens and ensure that they can participate in politics, in order to fulfill the democratic ideal of equal participation. Yet most outreach initiatives and the scientific research on political mobilization miss this target. They overwhelmingly focus on: university students who tend to have more education and political resources, and who are also generally more likely to vote, or alternatively focus on the population in general, regardless of the variety of needs and the different realities experienced by individuals. And so, we still do not know clearly what the effects of mobilization initiatives and information activities are for the individuals with lower levels of education and political resources. In this study, I evaluate the potential of a Voting Aid Application to inform and educate citizens in times of elections, and more specifically the lower educated citizens.

The web tools called the Voting Aid Applications (VAAs) are increasingly popular across democracies. A VAA is meant to inform and educate citizens during an electoral campaign, and operates at two levels. First, it pushes people to think

about their positions on a variety of political and social issues. Secondly, it provides summary information on the proximity of political parties to one's positions on the various issues or policies, or a summary table of one's level of agreement with the different parties. I thus consider the possibility that well-structured political information might be particularly useful to facilitate opinion formation and electoral decision-making among lower educated citizens (Verba, et al. 1995, Kam and Palmer 2008, Vassil 2011).

The fact is that individuals with a lower socio-economic status are more often non-voters and typical non-users of these voting aid tools. So in a field experiment, during the 2014 provincial electoral campaign in Quebec, I offered direct and randomized access to a VAA called the *Vote Compass,* to residents of a low-income neighborhood in the city of Montreal. With this experimental study, I evaluate whether informing and educating citizens, with interactive and structured political information, can have a positive impact on individuals' political resources and behaviors.

In the first part of this paper, I present the literature on political participation and education inequalities, as well as the literature on the effects of Internet and VAAs on individuals' political resources and participation. I finish this section by presenting my expectations about the potential benefits of VAAs, for the population in general and for the lower educated. In the second part, I present the experimental design of this study and the variables used in the analysis. I then offer a preliminary analysis, using comparison of means and the results of ttests statistics. I compare political outcomes, across waves of measurements for the different groups of

participants (control versus treatment group), for the general population and then for the lower educated sample of participants. I finish with a discussion of the results and some concluding remarks.

Information, Participation and the Disadvantaged

The Civic Voluntarism model shows that the lack of education and political resources, like interest and knowledge, can prevent citizens from taking part in political acts (Verba, et al. 1995, Delli Carpini and Keeter 1996). So in this sense, providing information about political parties and electoral issues could be one way to inform, interest and mobilize lower educated and young citizens. Moreover, Rational Choice theory argues that the process of acquiring political information is costly, and augments the overall cost of voting, up to a level that may overcome the benefits, and thus keep individuals away from the voting booth. In this context, directly providing citizens with simple and structured information has the potential to decrease these information costs and diminish the probability of non-voting.

In the past years, several mobilization and participation studies have advocated to pay more attention to the section of the population who are less inclined to participate: lower educated citizens, non-college youth, and working youth (Jarvis, et al. 2005, Zaff, et al. 2009, Gallego 2010, Malatest and Associates 2011). One reason is that they are the most at risk of not voting (Blais, et al. 2004, Gallego 2009), and another, is that their reasons for not voting differ from the rest of the population (i.e. a lack of interest in politics and a lack of knowledge about parties and candidates, Malatest and Associates 2011). But the fact is that most

studies and experiments on mobilization strategies focus on the general population, or university students who are less in need of mobilization (Green and Gerber 2001, Hooghe, et al. 2010), or they alternatively fail to acknowledge that mobilization might not affect all citizens in the same way (with the exception of: Niven 2001, Arceneaux and Nickerson 2009). Thus we still do not clearly know what the effects of political information or mobilization programs are for the individuals who are least likely to vote.

Furthermore, the contemporary socio-political context makes it even more important to focus on the lower educated population. First, the traditional organizations of mobilization, like unions and churches (Rosenstone and Hansen 1993), have lost some of their influence and cannot efficiently perform their role anymore (Verba, et al. 1995, Gray and Caul 2000). Even political parties' capacity to mobilize voters has weakened, due to a weakening of partisan identification and negative feelings toward parties (Dalton and Wattenberg 2002, Gidengil, et al. 2002, Kittilson 2005). They now mostly target and mobilize habitual voters – who are generally older, educated and interested citizens (Wattenberg 2000). Secondly, the political landscape can become complex, like in Canada, where several party systems have become increasingly fractionalized. This increase in the number of parties raises the cost of information (Blais and Dobrzynska 1998) and makes it more difficult for citizens to match party policies to their own policy preferences (Blais and Carty 1990). In this context, the provision of structured and non-partisan information can assist less politically sophisticated citizens in fulfilling a more

demanding and difficult political task, which should ultimately increase their propensity to vote.

Internet and the Voting Aid Applications

The Web offers new opportunities to develop and implement information tools to mobilize citizens. In fact in the past decades, more institutions and mobilizing agents have used Information and Communication Technologies (ICTs) or the Internet to reach potential voters or participants, and more people use the Internet as their main source of information (Delli Carpini 2000, Polat 2005, Lance Bennett, et al. 2008). But empirical research on Internet's effect on political behavior has proven contradictory, or at least inconclusive: some studies document a clear and significant mobilization effect of Internet, while others remain more skeptical (Jennings and Zeitner 2003, Weber, et al. 2003, Nickerson 2007, Mossberger, et al. 2008, Hooghe, et al. 2010).

For the increasingly popular Voting Aid Applications (VAA), results on their mobilization effects are also at best tentative: some studies find a small but positive effect on turnout (Mykkanen and Moring 2006, Marschall and Schultze 2012), and others point to heterogeneous effects along age and education (Vassil 2011, Alvarez, et al. 2012). These web tools have mushroomed across western democracies (see Garzia and Marschall 2012 for an overview of the different national VAAs), but due to causal inference limits in the studies on VAAs, we still do not clearly know what are their main and conditional effects on political behavior. First, most of these studies rely on surveys with a non-representative sample of VAA users. Individuals

who first choose to use VAAs tend to be more educated, politically informed and interested. Then the users who decide to answer the survey may be the more enthusiastic and convinced about the VAA (Ladner and Pianzola 2010, Garzia and Marschall 2012, Pianzola, et al. 2012). An experimental design based on random assignment to VAA use, coupled with a panel survey could provide an adequate analysis of the causal effect of VAAs. I know of only two experimental studies on VAAs' political behavior effects (Vassil 2011, Pianzola, et al. 2012), but these experimental studies also suffer from an exposure bias (i.e. using more politically active and educated samples). The voting aid applications are usually more easily accessible for educated populations. The VAAs are in fact mostly advertised and accessible through media or organizational spaces that are more populated by habitual voters, activists, higher educated, knowledgeable and politically interested individuals (Ladner and Pianzola 2010, Garzia and Marschall 2012). So it seems like the Voting Aid Applications are currently 'preaching to the converted' and their effects remain largely unknown.

Expectations

I believe that the information and interactive nature of the Vote Compass will affect first and foremost political knowledge and interest of individuals. The reasoning is that the Vote Compass will induce individuals to learn about electoral issues, political parties and candidates. So individuals who will use the Vote Compass will experience a positive increase in their levels of political knowledge (compared to the control group), and this effect should be stronger among the lower

educated individuals who are usually less knowledgeable [Hypothesis 1]. Additionally, using the voting application will induce positive effects on political interest. The fact is that the Vote Compass may lead individuals to be more aware of the electoral campaign, to learn about various salient issues that matter in the electoral context, and lead them to be more interested in it, and especially for the lower educated individuals who are generally less interested in politics [Hypothesis 2]. Furthermore, learning about the existence of various party options and the diversity of societal issues discussed in the campaign could lead individuals to be more curious about the campaign and the election. In turn, these individuals could be more inclined to actively seek information about the campaign and the various electoral options. So individuals who use the Vote Compass would be more likely to seek information about the elections and political parties (compared to the control group), and this effect would be more noticeable among the lower educated [Hypothesis 3].

Furthermore, the Vote Compass asks participants their opinion on issue statements, and subsequently presents the parties' proximity to their own political position. So these steps of reflection on electoral issues and party options has the potential to facilitate the construction of an electoral opinion. So by decreasing the costs of information and stimulating opinion formation, the Vote Compass should generally decrease the probability of 'not voting' for the individuals who use it (compared to the control group), and even more so for lower educated individuals who tend to have fewer cognitive and political resources (Berinsky 2002) [Hypothesis 4].

Methodology

Studies evaluating Voting Aid Applications encounter problems of causal inference due to a double self-selection process (Pianzola 2014). First, higher educated, more interested individuals and habitual voters self-select into using VAAs. Secondly, the VAA users who are willing to answer a post-VAA survey are likely to be more educated and more satisfied with the tool in general. The current study avoids these pitfalls by using a randomized field experiment, combined with a pre-post survey design.

In the context of the 2014 Quebec electoral campaign, I offered direct but randomized access to the Vote Compass to residents of a low-income neighborhood of Montreal. In the two weeks prior to the provincial election, I recruited 400 participants in various locations of the neighborhood: on the street, in sports centers, community centers, food banks, subsidized restaurants, after school programs for children, and more. Anybody who was 18 years or older, a Canadian citizen, and a resident[1] of the neighborhood was offered 10$ to take part in a research project on 'the interests and knowledge of citizens on Quebec's current events'.

Every individual voluntarily participating in the study answered a survey (the pretest) and was then randomly[2] assigned to one of two websites (i.e. the

[1] Participants had to be residents of the neighborhood because: the Directeur Général des Élections du Québec has agreed to give me the actual voting rate of participants in this election, as long as they were concentrated in one neighborhood. The actual voting rates of participants (i.e. the average rate of voting for each experimental group) will be available in the next two months.
[2] Randomization was computer-automated.

treatment or the control condition). These experimental conditions consisted of an individual information session of about 10 to 15 minutes. These two surveys and the experimental condition were administered on an electronic tablet that participants used individually.

The treatment was the Vote Compass activity. While there exist a variety of voting aid applications, they are often non-partisan web tools and aim at informing citizens and facilitating their voting decision-making. Their "common operating principle (is that): they compare the positions of parties (or candidates) on a selection of policy issues with the position of the voter; at the end they calculate and display a rank-order list, at the top of which stands the party closest to the voter within the n-dimensional issue space" (Garzia and Marschall 2012). Alternatively, the control group was offered to visit a website with a quiz on movies in Quebec in 2013.

Participants were then recontacted by phone two to three weeks later (i.e. in the week following April 7th election), to do a follow-up phone survey (the post-test 2). And they were again given 5$ to thank them for their participation.

Variables and Measures

Four types of political outcomes[3] were measured at three points in time: before the experimental information activity (the pretest), right after the information activity (the post-test 1), and then two to three weeks after the information activity (the post-test 2). This pre-post design enables me to consider

[3] See Appendix A for question wording and the coding of measures.

short-term as well as medium term effects of the Vote Compass on a variety of political attitudes and behaviors. The pretest survey addressed attitudes and behaviors in the recent or distant past (i.e. at the beginning of the electoral campaign for attitudes, and it referred to 2012 for past electoral behavior). The post-test 1 measured participants' intentions for the upcoming weeks (in terms of heir attitudes and behaviors). And finally, the second post-test measured attitudes and behaviors in the last weeks of the electoral campaign, that is between the time of the experimental activity and the week following the election.

The first dependent variable, 'paying attention to the electoral campaign' is used as a proxy for interest in the electoral campaign. The frequency of attention given to the electoral campaign is coded from 0 (never) to 4 (daily). The second dependent variable, political knowledge, is measured in each wave with two questions related to electoral issues, parties or political figures. So the knowledge variable is a summary score of the number of correct answers to the two knowledge questions in each wave. It is coded from 0 (no correct answers) to 2 (all correct answers). The third dependent variable is information-seeking behavior. In the pretest, this variable captures whether participants usually inform themselves about politics (coded 0 for no, and 1 for yes). In the post-tests 1 and 2, the variable captures whether participants intended to search or did search information about candidates, parties or the election. It is coded from 0 (never) to 2 (several times).

The last dependent variable is voting behavior. In the current analysis, I use self-reported vote[4]. So participants were asked whether they: had voted in the 2012 provincial election (pretest), intended to vote in the 2014 election (post 1), and had voted in the 2014 election (post 2). The variable was coded 1 if eligible participants had voted (or intended to vote), and 0 otherwise.

In order to evaluate the effects of the Vote Compass (the treatment), I will compare the mean scores on political attitudes and behaviors, between the control and the treatment group. In a first step, I will do this for the whole population sample, and then for the lower educated sample. I use the measure of individual's highest degree completed to divide the sample between those who have a university experience or degree (the higher educated group), and those who have no schooling up to a maximum of a college/cegep degree (the lower educated). The education breakdown of the sample is as follows: 57.6% of the sample have a college/cegep degree or less, while 42.4% have some university education.

Results

In the fieldwork of this project, 400 participants were recruited to take part in the study. These individuals took the pretest and post 1 surveys on the same day (the usable sample is N=394). From these participants, 299 took part in the post-test 2 phone survey. The general retention rate is 75.9%, and rates are similar

[4] In a later version of the analysis, I will use actual votes. In a few months, the *Directeur Général des Élections du Québec* will provide me with average voting rates for the control and treated groups, based on the actual votes collected from official records. This will enable me, in the next stage of the analysis, to avoid relying on self-reported measures of voting, which are usually inflated. In this sense, the evaluation of the behavioral effect of the Vote Compass will be more precise.

within the control and the treatment groups[5] (See Table 1 in the Appendix). The control group tends to score higher on pretest measures of political variables, but the differences are not systematically significant, with the exception of: the rate to which individuals are registered on electoral lists and the search for political information. With regards to the socio-demographic characteristics, the control and treatment groups are similar.

In the current analysis, I evaluate the effect of the Vote Compass on two political attitudes and two political behaviors. For each of these outcomes, I consider whether the group of individuals using the Vote Compass makes significant gains in the short run (between the pretest and the post-test 1) and in the medium term (between the pretest and post-test2), compared to the control group. For that purpose, I compare the means of both groups and test for the significance of the differences in the means (i.e. ttests). First, I look at these comparisons of means for the general population sample, and then for the lower educated sample.

Political Knowledge

Table 2 presents the comparison of means between the treatment and control group for the four different political outcomes and the three waves of measurements (results of independent ttests). We can first see in this table, that knowledge levels are actually decreasing in the short and medium term. The vote compass group (VC) initially has a lower level of political knowledge, then gains an advantage over the control group (C) in the post 1, and comes back to a smaller

[5] Among the 183 participants who were randomly assigned to the control condition: 76,5% participated in the PT2. Among the 211 participants who were randomly assigned to the vote compass - treatment condition: 75,3% participated in the PT2.

disadvantage in knowledge in the post 2. So the group using the vote compass makes small marginal knowledge gains, compared to the control group. Or to put it in another way: the VC groups does not loose as much in knowledge as the control group. However, the differences in knowledge between the control and vote compass groups are small and never significant, in the three waves. These results are confirmed by the comparison of means for the same individuals across the waves (paired-sample ttests - see Table 4). Both the C and VC groups' knowledge levels significantly decrease in the post 1, but the loss is greater for the control group.

If we look at the lower educated sample in Table 3, we see that the difference in knowledge between the VC and C groups is stable and insignificant, in the three waves. When looking at the evolution of knowledge for the same individuals across waves (Table 5), we witness the same pattern as for the general population. So based on the results of the general sample and the lower educated sample, the first hypothesis is not confirmed. The Vote Compass does not have a positive effect on political knowledge for the individuals who use it.

Attention to the Electoral Campaign

The second attitude for which I assess the impact of the Vote Compass is political interest. It is measured with: the frequency of paying attention to the electoral campaign. Overall, we see in Table 2 that the frequency of attention to the campaign increases for all groups: between the first part of the campaign (pretest) and the second part (post 1 and 2), but also between the intentions of people to follow the campaign in the second part (post 1) and the levels they report about

paying attention in the second part (post 2). The results of the independent ttests in Table 2, show that the control group starts (in the pretest) with a close to significant higher level of attention, but that this initial advantage diminishes (in post 1) and reverses to the VC groups' advantage (in the post 2). But the differences between the C and VC groups are small and not significant, for each wave. Table 4 displays the evolution of the group means of interest, across the waves, for the same people. Here we see in the first column, that the short-term gains in 'attention to the campaign' are not significant, for both the control and the VC group. In the second column, we see that the medium term gains in attention are larger and highly significant, for both experimental groups, but that the VC groups makes greater gains in terms of interest in the campaign (+0.34 for the VC, compared to +0.25 for the C group). This trend is also visible on Graph 1, where the line for the VC attention level (VC 2) is steeper than the one of the control group (C 2).

When we turn to the lower educated sample, we can see a stronger effect of the VC on these individuals' interest levels. First, in Table 3, we see that while the control group initially pays more attention to the campaign, after the information activity the VC group experiences greater gains in attention (compared to the control group). However, the differences between the VC and C groups are not significant, at any time point. When we look at the time evolution of the attention for the same lower educated participants, in Table 5, we see that the VC group's willingness to pay attention to the campaign increases more in the post 1 compared to the control group (the VC experiences gains of 0.12 between the pretest and post 1, while the control group experiences a gain of 0.01), as in the post 2 for the

attention paid in the last weeks of the electoral campaign (the VC experiences gains of 0.46 between the pretest and post 2, while the control group experiences a gain of 0.31). Despite the fact that the short-term gains in attention are not significant for both the C and the VC groups, and that the medium term gains are significant for both the C and VC groups, the increase in the post 1 and post 2 measures of attention to the campaign are larger for the VC group, as shown on Graph 2.

While the increases in the levels of attention to the campaign after using the Vote Compass are not always significant (or not just significant for the VC), the results tend to show a positive effect of the vote compass for citizens using it, and even more so for the lower educated. So Hypothesis 2 is plausible but not confirmed.

Information-Seeking Behavior

We now turn to assessing the effect of the Vote Compass on information-seeking behavior. I measure whether participants intend to look for information on the elections in the second half of the electoral campaign (post 1), and whether they did search for information on the elections during the last part of the electoral campaign (post 2).

For the general population sample, we first note in Table 2 that the control group is initially and significantly more likely to inform themselves on politics, compared to the VC group. But after the experimental conditions, the differences between the control and VC groups are smaller and become non-significant. Turning to Table 4, with the results of the paired-sample ttests, we see that the levels of information-seeking behavior significantly increase in the short-run for the VC but not for the control group (the VC group experiences a highly significant gain of 0.10,

compared to a non-significant gain of 0.04 for the control group). This is also seen on Graph 3 where the line for the information behavior of the VC group (VC 1) is steeper than the one of the control group (C 1). In the medium term, the control group experiences a decrease in information seeking behavior, while the VC group experiences a small but non-significant gain. And as we see on Graph 3, the lines for the pre-post 2 differences are relatively flat (VC 2) or downward (C 2).

For the lower educated sample, there are no significant differences in the levels of information searches between the control and the VC groups, at any time point (Table 3). The control group initially searches for more information (pretest), but the differences decrease after the experiment. However, when we look at Graph 4 (based on paired-sample ttests), we observe that both in the short and medium term, the VC group experience steeper increases in their reported levels of information search (VC 1 and VC 2), compared to the control group (C1 and C2). And in fact, in Table 5, we see that the increases in the information behavior of the VC are of a larger scale and more significant than for the control group (in the short run, the VC gains 0.16 while the control group gains 0.11, and both are significant; and in the medium term, the VC gains 0.12 while the control group gains 0.04, and only the VC change is significant).

The results for information seeking behavior tend to point in the direction of a positive effect of the Vote Compass. The short-term increases in the information seeking behavior of the VC group are significant for both the general and the lower educated samples (but it is also significant for the lower educated control group). And, in the medium term, the increase in information seeking behavior is significant

for the lower educated sample. So Hypothesis 3 tends to be confirmed. The Vote Compass has some positive impact on individuals' information behaviors, and especially for the lower educated citizens.

Voting Behavior

The last behavior on which I evaluate the effects of the Vote Compass is electoral behavior. I consider whether using the Vote Compass may increase the intentions of voting in the upcoming election (post 1) and actual voting behavior in the election (post 2).

First, we can see in Table 2 that for the general population sample, the control group has higher voting rates in the three waves, but that the differences between the VC and C groups are never significant. If we turn to Graph 5, we see that voting intentions and behavior rose for both groups, after the experimental activity. However, the increases are larger for the VC group in both post-tests, and only significant for the VC group in the medium term (Table 4 - post 2: the VC group experiences a significant increase of 0.06, while the control group voting rate increases by a non-significant 0.05).

We observe relatively the same pattern for the lower educated sample. The differences between the control and vote compass groups are not significant, at any time point (Table 3). Voting rates are also rising for both experimental groups in the the post 1 and post 2, but as we see on Graph 6 the differences between the C and VC groups tend to be small. In the short term, voting intentions of the VC group increase (from the pretest levels) more than for the C control, and this increase is close to being significant (Table 5 - Post 1: the VC experiences an increase of 0,07 and the C

group 0,05). In the medium term, average voting rates of both experimental groups increase at the same rate and at a significant level (Table 5 - Post 2: the groups average vote rates increase by 0,10), and as we notice on Graph 6 the VC and C lines are superimposed (lines VC 2 and C 2).

The results of the comparison of the means of voting behavior, for the two experimental groups across the three waves, and for the two populations, tend to point to a small positive effect of the Vote Compass. While voting rates increase for both the VC and the C groups in the short and medium term, the VC group experiences larger increases (in the sort and medium term for the general population, and in the short term only for the lower educated sample). These increases are significant (or close to significant) in the medium term for the general population sample (+6% in the VC group's average voting rate, compared to their past levels), and in the short term voting intentions of the lower educated sample (+7% in the VC group's average voting rate, compared to past levels). Hence, Hypothesis 4 is partially confirmed: the Vote Compass has a small positive effect on voting for the general population in the medium term, and a small positive effect on vote intentions for the lower educated population in the short term.

Discussion and Conclusion

The Voting Aid Applications (VAAs) are becoming increasingly popular tools in the context of elections. Various types of applications are being developed for different levels of elections around the world, would it be municipal, regional or national. While these tools have the potential to inform and educate citizens on

electoral decision-making, and ultimately motivate them to cast a ballot, the fact is that we still do not know clearly what are the effects of these web applications on political attitudes and behaviors. Even if the number of studies on VAAs has risen, most of these still use survey data and encounter problems of self-selection biases. Moreover, not many studies consider the fact that the effects of these tools may vary depending on the users' background.

In this study, I have addressed some of the issues encountered by this growing field of research. I have used a field experiment in a low-income neighborhood to limit the self-selection biases and to look at conditional effects of the VAA based on individual education levels. While the effect of VAAs on electoral behavior has been at the centre of most investigations, I also consider VAAs' potential to stimulate political attitudes (knowledge and interest) and other political behaviors (information search).

The results of the experimental evaluation of the Vote Compass are generally small but positive for three of the political outcomes considered, and only the results on political knowledge tend to differ. We witness a small decrease in levels of knowledge in the short and medium term (although not significantly in the medium term); the short-term decrease might be an artifact of the questions asked in the post 1[6]. Overall the Vote Compass has no discernable effect on knowledge levels. For political interest, as measured by the levels of attention given to the electoral campaign, differences between the treatment and control conditions are not

[6] In the pretest and post-test 2 questions were asked about political figures, while in the post 1 questions were asked about issues discussed in the campaign and the number of parties taking part in the electoral campaign.

significant, but evidence shows that individuals using the Vote Compass are lead to pay even *more* attention to the campaign than those who do not use it. Among the general population, interest in the campaign increases by 8.5% among the Vote Compass users (compared to a 6.3% increase for the control group), and it increases by 11.5% among lower educated users of the VC (compared to 7.8% increase among the lower educated control group). The results also show significant positive effects of the Vote Compass: on the intentions of the general population to search for information on the elections (an increase by 10%), and on the actual rate at which the lower educated searched for information during the later part of the campaign (+12%). Finally, the Vote Compass did have some positive and significant effects on electoral behavior. Among the general population, voting rates in the 2014 election increased by 6% among users of the Vote Compass, compared to their participation rate in 2012. And for the lower educated sample that used the VC, vote intentions rose by 7%. Despite the generally small effects of the Vote Compass, the results tend to show that Voting Aid Applications can stimulate political attitudes of users, and motivate some to be more active in the campaign and the election, and in particular the less educated citizens.

Throughout the different test results, it was noticeable that both experimental groups experienced some increases in their attitudinal and behavioral levels in the later part of the campaign (i.e. between the post 1 and post 2). One reason for this trend might be that the election, in the neighborhood where the experiment took place, was a close race and that political parties reached out to the

population a lot[7]. This might mean that our results are a conservative estimate of the political potential of the Vote Compass, when elections are not close or when party mobilization is not as intense. Other studies using different political and socio-economic contexts will be necessary to generalize the results.

Given the continued popularity of VAAs and other web applications in the future, more research is needed to understand the effects of these information and education tools. First, we need more experimental studies to assess the causal effects of these 'apps', would it be on political attitudes or behaviors. Secondly, we need to better understand the mechanisms that are at play in the VAAs' effects, which may lead to increased electoral behavior. Thirdly, characteristics of VAAs and political contexts should be considered more specifically as they may condition the effects of these 'apps'. Finally, VAA studies and mobilization studies in general, need to pay more attention to the characteristics of 'users' and how they may react differently to information or mobilization stimulus given their background (i.e. youth, women and the less politically active).

The results of political mobilization and VAA research have important policy implications. These studies have the potential to inform and improve strategies of political information, education and mobilization. Furthermore, it can help to identify tools or 'apps' that are more efficient at informing and mobilizing certain categories of citizens. If more targeted and efficient strategies of information are to

[7] In fact, 55% of the post-test 2 sample said they had been contacted *at least once* by a candidate or party volunteer to encourage them to vote (would it be by phone, on the street, or through door-to-door canvassing).

be used to reach less political or less active groups in the population, we could then hope for a reduction in participation inequalities.

REFERENCES

Alvarez, R. Michael, Ines Levin, Alexander H. Trechsel, and Kristjan Vassil. 2012. "Voting Advice Applications: How Useful? For Whom?" Paper presented at the Conference "Internet, Policy, Politics 2012: Big Data, Big Challenge?".

Arceneaux, Kevin, and David W. Nickerson. 2009. "Who Is Mobilized to Vote? A Re-Analysis of 11 Field Experiments." *American Journal of Political Science* 53: 1-16.

Berinsky, Adam J. 2002. "Silent Voices: Social Welfare Policy Opinions and Political Equality in America." *American Journal of Political Science* 46: 276-87.

Blais, A., and A. Dobrzynska. 1998. "Turnout in Electoral Democracies." *European Journal of Political Research* 33: 239-61.

Blais, André, and Kenneth R. Carty. 1990. "Does Proportional Representation Foster Voter Turnout?". *European Journal of Political Research* 18: 167-81.

Blais, André, Elisabeth Gidengil, and Neil Nevitte. 2004. "Where Does Turnout Decline Come From?". *European Journal of Political Research* 43: 221-36.

Campbell, David E. 2006. "What Is Education's Impact on Civic and Social Engagement?" Paper presented at the Measuring the effects of education on health and civic engagement: Proceedings of the Copenhagen symposium.

Dalton, R. J., and M. P. Wattenberg. 2002. *Parties without Partisans: Political Change in Advanced Industrial Democracies*: Oxford University Press, USA.

Delli Carpini, Michael X. 2000. "Gen.Com: Youth, Civic Engagement, and the New Information Environment." *Political Communication* 17: 341-49.

Delli Carpini, Michael X. , and Scott Keeter. 1996. *What Americans Know About Politics and Why It Matters*. New Haven: Yale University Press.

Gallego, Aina. 2010. "Understanding Unequal Turnout: Education and Voting in Comparative Perspective." *Electoral Studies* 29: 239-48.

———. 2009. "Where Else Does Turnout Decline Come From? Education, Age, Generation and Period Effects in Three European Countries." *Scandinavian Political Studies* 32: 23-44.

Garzia, Diego, and Stefan Marschall. 2012. "Voting Advice Applications under Review: The State of Research." *International Journal of Electronic Governance* 5: 203-22.

Gerber, A. S., D. P. Green, and R. Shachar. 2003. "Voting May Be Habit Forming: Evidence from a Randomized Field Experiment." *American Journal of Political Science* 47: 540-50.

Gidengil, Elisabeth, André Blais, Richard Nadeau, and Neil Nevitte. 2002. "Changes in the Party System and Anti-Party Sentiment." In *Political Parties, Representation, and Electoral Democracy in Canada*, ed. W. P. Cross. New York: Oxford University Press. 68-86.

Gray, M., and M. Caul. 2000. "Declining Voter Turnout in Advanced Industrial Democracies, 1950 to 1997." *Comparative Political Studies* 33: 1091-122.

Green, D. P., Mary C. McGrath, and Peter M. Aronow. 2013. "Field Experiments and the Study of Voter Turnout." *Journal of Elections, Public Opinion & Parties* 23: 27-48.

Green, Donald P., and Alan S. Gerber. 2001. "Getting out the Youth Vote: Results from Randomized Field Experiments." In *Secondary Getting out the Youth Vote: Results from Randomized Field Experiments*, ed Secondary ———. Reprint, Reprint.

Hooghe, Marc, Sara Vissers, Dietlind Stolle, and Valérie-Anne Mahéo. 2010. "The Potential of Internet Mobilization: An Experimental Study on the Effect of Internet and Face-to-Face Mobilization Efforts." *Political Communication* 27: 406 - 31.

Jarvis, Sharon E., Lisa Montoya, and Emily Mulvoy. 2005. "The Political Participation of Working Youth and College Students." In *Secondary The Political Participation of Working Youth and College Students*, ed Secondary ———. CIRCLE - Working Paper 36. Reprint, Reprint.

Jennings, M. Kent, and Vicki Zeitner. 2003. "Internet Use and Civic Engagement: A Longitudinal Analysis." *Public Opinion Quarterly* 67: 311-34.

Kam, Cindy D., and Carl L. Palmer. 2008. "Reconsidering the Effects of Education on Political Participation." *Journal of Politics* 70: 612-31.

Kittilson, M. C. 2005. "Mobilization, Participation and Change in Post-Industrial Democracies, 1960-2002." *Midwest Political Science Association*.

Ladner, Andreas, and Joelle Pianzola. 2010. "Do Voting Advice Applications Have an Effect on Electoral Participation and Voter Turnout? Evidence from the 2007 Swiss Federal Elections." In *Electronic Participation*, eds. E. Tambouris, A. Macintosh and O. Glassey: Springer. 211-24.

Lance Bennett, W., Christian Breunig, and Terri Givens. 2008. "Communication and Political Mobilization: Digital Media and the Organization of Anti-Iraq War Demonstrations in the Us." *Political Communication* 25: 269-89.

Mahéo, Valérie-Anne, Dietlind Stolle, Marc Hooghe, and Sara Vissers. 2008. "Is There a Mobilization Gap? The Role of Socio-Economic Status in Internet and Face-to-Face Experimental Mobilization Efforts." Paper presented at the International Conference Field Experiments in Comparative Politics and Policy, Manchester, UK.

Malatest, R.A., and & Associates. 2011. "National Youth Survey Report - Prepared for Elections Canada." In *Secondary National Youth Survey Report - Prepared for Elections Canada*, ed Secondary ———. Ottawa. Reprint, Reprint.

Marschall, Stefan, and Martin Schultze. 2012. "Voting Advice Applications and Their Effect on Voter Turnout: The Case of the German Wahl-O-Mat." *International Journal of Electronic Governance* 5: 349-66.

Mossberger, Karen, Caroline J. Tolbert, and Ramona S. McNeal. 2008. *Digital Citizenship*: MIT Press Cambridge.

Mykkanen, Juri, and Tom Moring. 2006. "Dealigned Politics Comes of Age? The Effects of Online Candidate Selectors on Finnish Voters." Paper presented at the Conference of Politics on the Internet: New Forms of Media for Political Action, Tampere.

Nickerson, David W. 2007. "Does Email Boost Turnout?". *Quarterly Journal of Political Science* 2: 369-79.

Niven, David. 2001. "The Limits of Mobilization: Turnout Evidence from State House Primaries." *Political Behavior* 23: 335-50.

———. 2004. "The Mobilization Solution? Face-to-Face Contact and Voter Turnout in a Municipal Election." *Journal of Politics* 66: 868-84.

Pianzola, Joelle, Alexander Trechsel, Guido Schwerdt, Kristjan Vassil, and M. R. Alvarez. 2012. "The Effect of Voting Advice Applications (Vaas) on Political Preferences. Evidence from a Randomized Field Experiment." Paper presented at the Annual Meeting of the American Political Science Association, New Orleans.

Polat, Rabia Karakaya. 2005. "The Internet and Political Participation Exploring the Explanatory Links." *European Journal of Communication* 20: 435-59.

Putnam, Robert D. 2000. *Bowling Alone : The Collapse and Revival of American Community*. New York: Simon & Schuster.

Rosenstone, SJ, and JM Hansen. 1993. *Mobilization, Participation, and Democracy in America*. New York: MacMillan.

Vassil, Kristjan. "Voting Smarter? The Impact of Voting Advice Applications on Political Behavior ", European University Institute, 2011.

Verba, Sidney, Kay Lehman Schlozman, and Henry E. Brady. 1995. *Voice and Equality: Civic Voluntarism in American Politics*. Cambridge: Harvard University Press.

Vissers, S., M. Hooghe, D. Stolle, and V. A. Mahéo. 2012. "The Impact of Mobilization Media on Off-Line and Online Participation: Are Mobilization Effects Medium-Specific?". *Social Science Computer Review*: 1-18.

Wattenberg, M. P. 2000. "The Decline of Party Mobilization." In *Parties without Partisans: Political Change in Advanced Industrial Democracies*, eds. R. J. Dalton and M. P. Wattenberg. New York: Oxford University Press, USA. 64-76.

Weber, Lori M., Alysha Loumakis, and James Bergman. 2003. "Who Participates and Why? An Analysis of Citizens on the Internet and the Mass Public." *Social Science Computer Review* 21: 26-42.

Zaff, Jonathan F., James Youniss, and Cynthia M. Gibson. 2009. "An Inequitable Invitation to Citizenship: Non-College-Bound Youth and Civic Engagement." *Denver, CO: Philanthropy for Active Civic Engagement (PACE)*.

APPENDIX A - Survey Questions and Measures

PRETEST survey (right before the experimental condition):

What are the topics that you prefer to seek information about? (in the newspapers, on the web, in magazines or other) Choose all that apply.
Categories: sports, local news, arts and shows, TV shows, politics, health and family, horoscope, celebrity news, economy, employment, other.
Answer categories: yes - no
Information seeking behavior (pretest): is coded 0 for no, and 1 for yes

How frequently do you currently pay attention to the electoral campaign?
Answer categories: Never, Less than once a week, once a week, several times a week, every day.
Attention to the campaign (prestest): is coded 0 for never, up to 4 for every day

Who is the current Prime Minister of Quebec?
Answer categories: Françoise David, Denis Coderre, Pauline Marois, François Legault, I don't know
Correct answer is coded 1, and incorrect answers or I don't know are coded 0.

Who is the current Minister of Finance in Quebec?
Answer categories (pictures and names): Thomas Muclaire, Nicolas Marceau, Jean Charest, Philippe Couillard, I don't know
Correct answer is coded 1, and incorrect answers or I don't know are coded 0.

Political knowledge (pretest) is a summary scale of the number of correct answers to the two political knowledge questions: coded 0 for no correct answers, coded 1 for one correct answer, and coded 2 for all correct answers.

Did you vote in the last provincial election in 2012?
Answer categories: Yes, no, I don't know, I was not eligible
Voting behavior (pretest) - past voting behavior: is coded 0 for no and I don't know, and 1 for yes.

POST-TEST 1 survey (right after the experimental condition):

How frequently do you think you will pay attention to the electoral campaign in the next weeks?
Answer categories: Never, Less than once a week, once a week, several times a week, every day.
Attention to the campaign (post-test 1) - Intention to pay attention to the campaign: is coded 0 for never, up to 4 for every day

In the upcoming weeks, do you think you will read or search for information on the

elections, political parties or candidates?
Answer categories: Yes several times; yes once or twice; no never; I don't know
Information seeking behavior (post-test 1) - Intention to search for information: coded 0 for never and I don't know; 0.5 for once or twice; and coded 1 for several times.

Do you know how many political parties take part in the electoral campaign?
Answer categories: 2, 4, 7, 10, I don't know
Correct answer is coded 1, and incorrect answers or I don't know are coded 0.

Which of the following issues are discussed in the electoral campaign? Select all that apply.
Answer categories: religious symbols in the workplace, commercial relations with China, funding of health programs, Quebec's budget equilibr
Knowledge of all 4 correct issues is coded 1, and incomplete knowledge of correct issues or I don't know are coded 0.

Political knowledge (post 1) is a summary scale of the number of correct answers to the two political knowledge questions: coded 0 for no correct answers, coded 1 for one correct answer, and coded 2 for all correct answers.

Do you think you will vote in the next provincial election, in April?
Answer categories: certainly not, probably not, probably yes, certainly yes, I don't know.
Voting behavior (post 1) - Intention to vote: coded 0 for certainly and probably not, or I don't know, and coded 1 for probably and certainly yes.

POST-TEST 2 survey (about three weeks after the experimental condition):

How frequently did you pay attention to the electoral campaign in the past weeks?
Answer categories: Never, Less than once a week, once a week, several times a week, every day.
Attention to the campaign (post 2): is coded 0 for never, up to 4 for every day

In the past weeks, did you read or search for information on the elections, political parties or candidates?
Answer categories: Yes several times; yes once or twice; no never; I don't know.
Information seeking behavior (post 2): coded 0 for never and I don't know; 0.5 for once or twice; and coded 1 for several times.

Did you vote in the provincial election?
Answer categories: certainly not, probably not, probably yes, certainly yes, I don't know.
Answer categories: Yes, no, I cancelled my vote, I don't know, I am not eligible.
Voting behavior (post 2): is coded 0 for no and I don't know, and 1 for yes and cancelling one's vote; non eligible participants were excluded from the analysis.

Can you tell me who is the new Prime Minister of Quebec?
No answer categories (i.e. fill in)
Correct answer is coded 1, and incorrect answers or I don't know are coded 0.

Can you tell me who is the leader of the political party: the Coalition Avenir Quebec?
No answer categories (i.e. fill in)
Correct answer is coded 1, and incorrect answers or I don't know are coded 0.

Political knowledge (post 2) is a summary scale of the number of correct answers to the two political knowledge questions: coded 0 for no correct answers, coded 1 for one correct answer, and coded 2 for all correct answers.

APPENDIX B - Tables

Table 1: Sample size in each wave of the survey, across experimental conditions

	Pre-Post 1	**Post 2**
Control	183 46,4%	140 46,8%
Vote Compass	211 53,6%	159 53,2%
Total	394 100%	299 100%

Table 2: Comparison of means between the experimental conditions, for the four different political outcomes - Results of independent ttests (Mean of control - Mean of treatment)

GENERAL POPULATION		Pretest	PT1	PT2
Attention to the campaign				
0-4	Control	2,58	2,62	2,87
	VComp	2,35	2,45	2,88
	Diffce	0,23	0,17	-0,01
	sig level	0,054	not sig	not sig
	N	387	387	299
Information Seeking				
0-1	Control	0,58	0,62	0,59
	VComp	0,46	0,57	0,52
	Diffce	0,11	0,05	0,07
	sig level	0,012	not sig	not sig
	N	394	385	299
Knowledge				
0-2	Control	1,62	0,98	1,54
	VComp	1,54	1,00	1,52
	Diffce	0,07	-0,02	0,03
	sig level	not sig	not sig	not sig
	N	389	385	299
Voting behavior				
0-1	Control	0,76	0,75	0,85
	VComp	0,71	0,74	0,80
	Diffce	0,05	0,01	0,05
	sig level	not sig	not sig	not sig
	N	378	386	297

Table 3: Comparison of means between the experimental conditions, for the four different political outcomes, ***for the lower educated sample*** - Results of independent ttests (Mean of control - Mean of treatment)

LOWER EDUCATED		Pretest	PT1	PT2
Attention to the campaign				
0-4	Control	2,21	2,22	2,51
	VComp	2,03	2,17	2,68
	Diffce	0,18	0,05	-0,17
	sig level	not sig	not sig	not sig
	N	223	220	168
Information Seeking				
0-1	Control	0,41	0,52	0,49
	VComp	0,32	0,48	0,46
	Diffce	0,09	0,04	0,04
	sig level	not sig	not sig	not sig
	N	227	218	168
Knowledge				-
0-2	Control	1,37	0,82	1,30
	VComp	1,40	0,86	1,34
	Diffce	-0,03	-0,04	-0,04
	sig level	not sig	not sig	not sig
	N	223	218	168
Voting behavior				
0-1	Control	0,65	0,69	0,80
	VComp	0,63	0,71	0,80
	Diffce	0,02	-0,02	0,00
	sig level	not sig	not sig	not sig
	N	215	219	167

Table 4: Comparison of means across waves, for the four different political outcomes, between the experimental conditions - Results of paired sample ttests (Mean of pretest *minus:* PT1 or PT2)

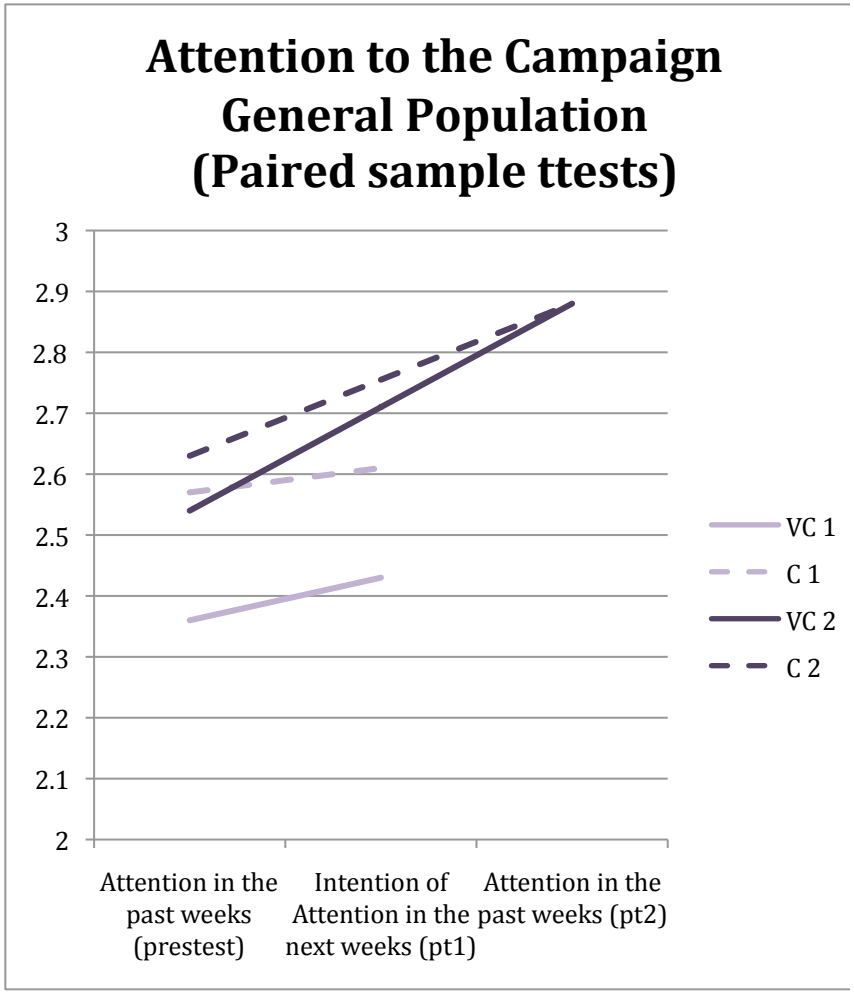
GENERAL POPULATION		Pretest ➞ PT 1	Pretest ➞ PT2
Attention to the campaign			
0-4	**Control**	2,57 ➞ 2,61	2,63 ➞ 2,88
	Diffce	-0,04	-0,25
	sig level	not sig	0,003
	N	181	138
	VComp	2,36 ➞ 2,43	2,54 ➞ 2,88
	Diffce	-0,07	-0,34
	sig level	not sig	0,000
	N	199	155
Information Seeking			
0-1	**Control**	0,58 ➞ 0,62	0,64 ➞ 0,59
	Diffce	-0,04	0,05
	sig level	not sig	not sig
	N	182	140
	VComp	0,47 ➞ 0,57	0,50 ➞ 0,52
	Diffce	-0,10	-0,02
	sig level	0,001	not sig
	N	203	159
Knowledge			
0-2	**Control**	1,62 ➞ 0,98	1,62 ➞ 1,54
	Diffce	0,64	0,08
	sig level	0,0000	not sig
	N	181	140
	VComp	1,55 ➞ 1,02	1,57 ➞ 1,52
	Diffce	0,53	0,05
	sig level	0,000	not sig
	N	199	155
Voting behavior			
0-1	**Control**	0,76 ➞ 0,77	0,81 ➞ 0,86
	Diffce	-0,01	-0,05
	sig level	not sig	not sig
	N	176	138
	VComp	0,71 ➞ 0,75	0,76 ➞ 0,82
	Diffce	-0,04	-0,06
	sig level	not sig	0,036
	N	195	152

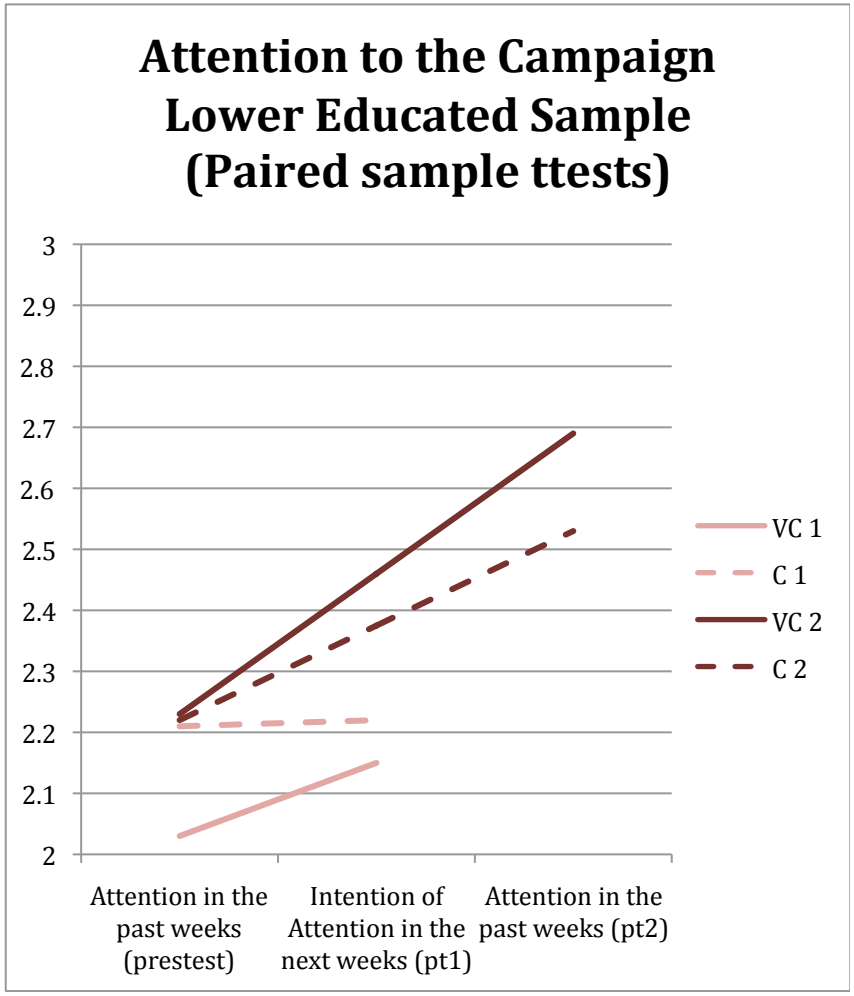
Table 5: Comparison of means across waves, between the experimental conditions, *for the lower educated sample* - Results of paired sample ttests (Mean of pretest *minus:* PT1 or PT2)

LOWER EDUCATED		Pretest ➞ PT 1	Pretest ➞ PT2
Attention to the campaign			
0-4	**Control**	2,21 ➞ 2,22	2,22 ➞2,53
	Diffce	-0,01	-0,31
	sig level	not sig	0,009
	N	99	73
	VComp	2,03 ➞ 2,15	2,23 ➞ 2,69
	Diffce	-0,12	-0,46
	sig level	not sig	0,000
	N	117	91
Information Seeking			
0-1	**Control**	0,41 ➞ 0,52	0,45 ➞ 0,49
	Diffce	-0,11	-0,04
	sig level	0,014	not sig
	N	99	74
	VComp	0,32 ➞ 0,48	0,34 ➞ 0,46
	Diffce	-0,16	-0,12
	sig level	0,000	0,013
	N	119	94
Knowledge			
0-2	**Control**	1,38 ➞ 0,82	1,38 ➞ 1,30
	Diffce	0,56	0,08
	sig level	0,000	not sig
	N	98	74
	VComp	1,41 ➞ 0,88	1,44 ➞ 1,35
	Diffce	0,53	0,09
	sig level	0,000	not sig
	N	116	91
Voting behavior			
0-1	**Control**	0.65 ➞ 0.71	0,71 ➞ 0,81
	Diffce	-0.05	-0,10
	sig level	not sig	0,035
	N	95	73
	VComp	0,64 ➞ 0,71	0,71 ➞ 0,81
	Diffce	-0,07	-0,10
	sig level	0,059	0,014
	N	113	88

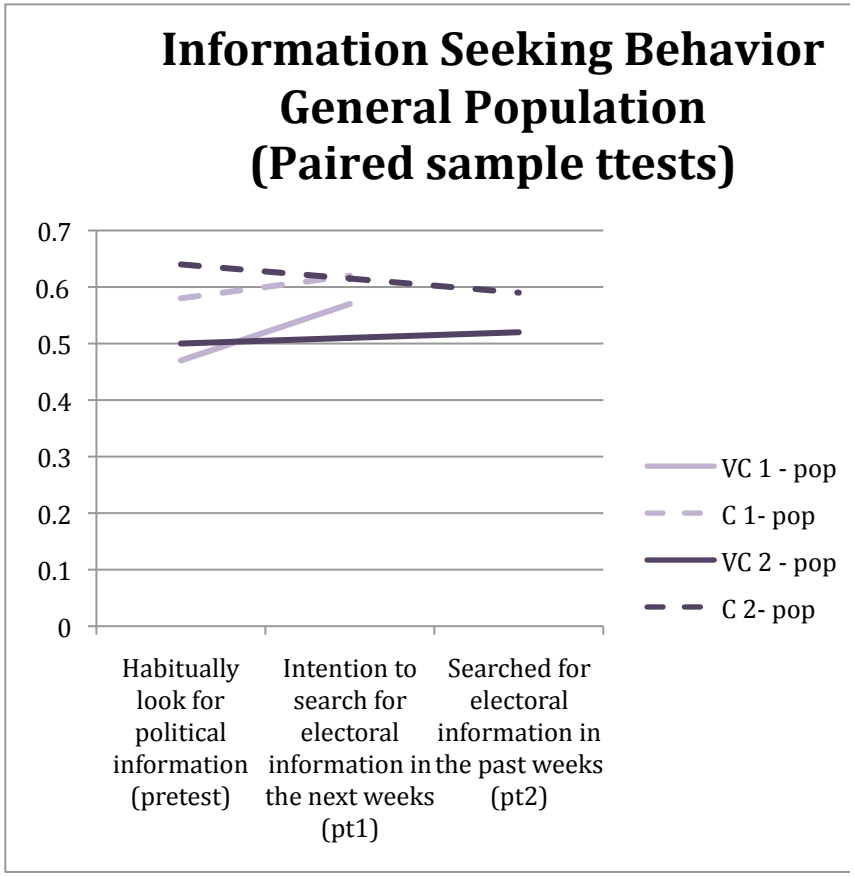
APPENDIX C - Graphs

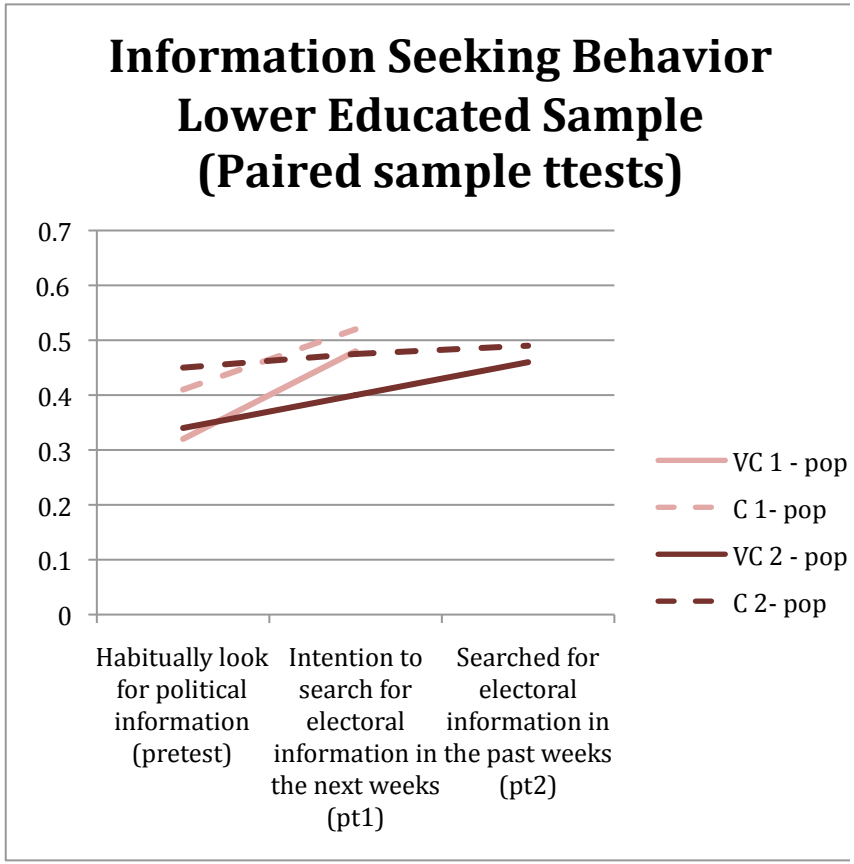
Graphs 1 & 2: Comparison of means of attention given to the campaign, across waves and between the experimental conditions - Results of paired sample ttests





Graphs 3 & 4: Comparison of means of information seeking-behavior, across waves and between the experimental conditions - Results of paired sample ttests





Graphs 5 & 6: Comparison of means of voting behavior, across waves and between the experimental conditions - Results of paired sample ttests