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Exploring Their Options? Tracking How Voters Actually Use Voting Advice Applications

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Abstract

Voting advice applications (VAAs) are a widely used tool by voters across democracies. However, we know surprisingly little about how voters actually interact with these tools in practice. Here, we track the objective usage behavior of a consenting and representative sample of voters in an online VAA in Denmark. This enables us to identify the extent to which VAA users explore their positional congruence with more than one of their electoral options as well as how much time they spend doing so. Using this data, we find that a majority of users focus on their own party, but also that a substantial number of users explore other party options and spend significant time doing so. Moreover, these patterns are conditioned by vote choice certainty and political interest. Undecided and uncertain voters are more likely to explore multiple party options, and politically interested users engage with these features as well. The results have important implications for research on VAA effects, which has so far predominantly focused on VAA advice but not on the potential impact of other VAA functionalities. Moreover, the implication for practitioners is that there is a demand for VAA functions that allow users to obtain more nuanced information than merely the voting advice.

Keywords

behavioral data; elections; political behavior; vote choice; voting; voting advice applications

1. Introduction

Voting advice applications (VAAs) are popular tools in contemporary democracies with millions of users in countries such as the Netherlands, Finland, Germany, and Denmark (Bundeszentrale für politische Bildung,

2021; Hansen & Stubager, 2019; Statistics Finland, 2023; van de Pol et al., 2019). It is thus not surprising that VAAs have attracted scholarly attention among researchers. So far, much of the research has focused on whether and how VAAs influence their users' vote intention and choice. Most experimental studies find no effects of VAAs use on vote switching (Enyedi, 2016; Mahéo, 2016; Munzert et al., 2020; Pianzola et al., 2019), but more recent research has shown that this is likely because VAAs effects depend on the type of advice that is given (Germann et al., 2023; Tromborg & Albertsen, 2023). Some users receive voting advice that is congruent with their pre-existing party preference, which strengthens their intention to vote for this party, while others receive incongruent advice, which leads them to switch to the recommended party instead. These effects are especially strong among voters who are politically interested enough to use a VAA but not so interested that they engage in more time-consuming efforts, such as following political news and debates. Undecided voters are also more likely to follow the advice (Garry et al., 2019; Germann et al., 2023; Tromborg & Albertsen, 2023).

While we know a great deal about the effects of voting advice, we still know surprisingly little about how users engage with VAAs. Existing VAAs research on vote intention and choice has focused almost exclusively on the effects of the VAA recommendation, but users may also seek and use information from other VAAs features. For example, it has been argued that more politically interested users are less influenced by VAAs advice because they seek more nuanced information elsewhere (Tromborg & Albertsen, 2023). Instead, they use VAAs to confirm their choice or for entertainment purposes (van de Pol et al., 2014). However, VAAs can also provide relatively nuanced information—for example, by showing users party positions on each VAA question along with party statements about why they take the issue positions that they do. Some politically interested users may engage with this information because it provides information that they find relevant. Likewise, voters who use VAAs to decide whom to vote for may engage with this additional information across several of their party options to receive potentially relevant information. We refer to citizens who access this type of information as "explorers."

The purpose of this article is to understand how much voters engage with nuanced VAA functionalities and to map which types of voters are more likely to use these functionalities. To do so, we collected a consenting and demographically representative sample of Danish voters, asked them to use a VAA, and answer a set of background questions. We recorded how voters interacted with the VAA in terms of which buttons they clicked, what parties they explored, and how much time they spent on various activities in the VAA. This allows us to map the extent to which voters explore party positions on individual issues and the party explanations for taking those positions. Moreover, we measure the survey respondents' political interest, vote choice certainty, and self-reported motivation for using VAAs. This allows us to analyze how different types of people use VAAs differently, as well as their reasons for doing so.

We find that most of our respondents did not engage with more nuanced VAAs information than they had to by design, but still, a substantial share did. A little more than a quarter (28%) of the respondents sought out the detailed issue stances of more than one party, even though they did not have to, and an additional 12% read the parties' own statements about why they took the positions that they did. These numbers are likely conservative estimates of real-life VAAs behavior, since the respondents in our sample are paid to take surveys and they received no monetary benefit for exploring these options. Moreover, we find that undecided and uncertain voters are more likely to report using VAAs to find out whom to vote for and to explore the issue positions of more than one party. Furthermore, politically interested VAAs users, if anything, are more likely to explore multiple party options than those who are less politically interested.

These results have important implications for VAAs researchers and practitioners. In terms of research, they corroborate previous findings that undecided voters are more likely to be influenced by a VAA. Furthermore, they demonstrate that the information role of VAAs goes well beyond an advisory role. Many users engage with the more nuanced information that is frequently available in VAAs after the advice has been given, and especially so when they are undecided or uncertain about whom to vote for. Moreover, politically interested voters do not just use VAAs to confirm their choice—many of them also use VAAs to explore other options. This indicates that existing research on VAAs effects likely underestimates the total influence that these tools have on voters. A key implication for VAAs designers is that there is good reason to include user options to explore detailed information because a non-trivial number of users engage with these additional information sources.

2. Background

Much of our knowledge on how voters use VAAs comes from van de Pol et al.'s (2014) study on Dutch VAAs users during the 2012 general election in the Netherlands. In this study, 7% of the users of the Kieskompas VAA opted in to take a post-VAA survey. The authors used a latent class analysis on their behavior to identify three types of VAA users: doubters, seekers, and checkers. Doubters and seekers both use VAAs to find out whom to vote for, but differ in their level of certainty about which party to vote for prior to using the VAA (with seekers having clearer party preferences). Checkers, on the other hand, have already decided and use the VAA primarily to confirm their choice or for entertainment purposes. This group was the largest of the three (≈58% of the sample) and was characterized by a high level of political interest. More recently, it has been suggested by Dieing (2025) that there is an additional group of users called skeptics, who are more prone to use only a single VAA instead of multiple and are supportive of right-leaning ideology, showing dissatisfaction with the political system.

While this typology has contributed greatly to our understanding of how different types of citizens intend to use VAAs, our study contributes in several ways. First, we analyze how voters use VAAs in a different country and at a more recent time. This is important to achieve a more general understanding of VAAs users in a more contemporary context. Second, we use a sample of demographically representative citizens. Thus, we can say how the average voter would use a VAA. This is a useful contribution because, as van de Pol et al. (2014) note, the Dutch citizens who opted in to the post-VAA survey were systematically different from other users and citizens. Third, we include objective behavioral measures of how users interacted with the VAA, including post-advice options. In conjunction with self-reported data on the users' political interest, vote certainty, and reasons for using a VAA, this allows us to assess whether VAAs users with high levels of interest and certainty are merely checkers, or whether they also use other VAA information features.

Based on the results from the recent behavioral VAA research reviewed in the introduction, we expect that citizens with low political interest mainly focus on the advice when using a VAA. These users need a simple, low-cost cue that enables them to make a more informed choice than they otherwise would (Tromborg & Albertsen, 2023), and a recommendation from a VAA has the potential to provide exactly that. For undecided or uncertain users, we expect the picture to be different. These users are not necessarily uninterested in politics and need quality information that allows them to make the best choice given their preferences. Consequently, they should be more likely to engage with more time-consuming VAA information features than decided voters on average. Finally, we also expect that high-interest voters are not merely checkers but that they also engage more with nuanced VAA information. Existing research

suggests that the effects of VAA advice are negligible among citizens in this latter group, which makes sense considering that they can gain more nuanced information about their candidates and parties elsewhere (e.g., in the news, following debates, and social media). Likewise, van de Pol et al.'s (2014) results suggest that they primarily use VAAs to confirm their choice or for entertainment. However, if politically interested voters do, in fact, demand nuanced information, then they may perceive an incentive to engage with more detailed VAA information features, such as exploring party positions on individual issues. In this way, VAAs may not just influence low-interest voters as an information shortcut but also high-interest voters as a more detailed information tool.

3. Case, Data, and Methods

The analyses draw on data collected in Denmark, where VAAs are very popular, with around 60% of the electorate actively using one or more VAAs in a general election (Hansen & Stubager, 2019). In Denmark, VAAs are mostly designed and implemented by media outlets, such as newspapers and TV stations. In this study, we draw on a VAA developed by us in collaboration with a major Danish newspaper. The mentioned VAA used in the study is a party-based VAA that is running between elections on the newspaper's website (jp.dk). The VAA consisted of three parts (Figures B1—B7 in the Supplementary File depict the visual appearance of the VAA): First, users were asked to submit their answers on a set of issue positions—the so-called VAA statements. An example of such a statement is shown in Figure B4 in the Supplementary File. Note that the current VAA includes 18 issue statements. This is slightly fewer than most Danish VAAs, which means that we may underestimate how much time voters generally spend filling out the statements. Second, users proceeded to the results page of the VAA, where they were shown which party's issue stances were most congruent with their own positions. They were also shown the top five and bottom five of these matches (Figure B5 in the Supplementary File displays an example of the results page). The VAA includes 12 different parties listed in Section D of the Supplementary File. The third part of the VAA was the detailed party profiles. By clicking on one of the parties displayed on the results page, a detailed overview of this party's issue positions would be shown, including the option to read party statements about why they took the stance that they did. An example of a detailed party profile is shown in Figure B6 in the Supplementary File. Users could also view parties' written justifications for their policy positions (see Figure B7 in the Supplementary File). After viewing any party profile, users could then return to the results page and open another party profile if they wanted to. Importantly, in this study, we designed the VAA so that voters had to remain on the results page for at least 30 seconds, and they had to open at least one party profile to proceed. This means that when we look at the time users spent on results and party profiles—and when we look at the number of party profiles users opened—it is important to keep this baseline requirement in mind, as we highlight in Section 4. To assess the extent to which these requirements limit the generalizability of the findings in terms of what kind of parties voters choose to visit, we report both the findings for the entire sample and the sample of users who visit more than one party. For this latter group, we know that they would visit party profiles even if the requirements were not there.

3.1. Data Collection and Analyses

We recruited an online panel of respondents through the survey company Epinion and directed respondents to the VAA described above. Moreover, we asked them to fill out a background survey. The sample was selected to meet census-based quotas on gender, age, region, and education. The users were informed

about the study and gave active consent. Accordingly, we collected two kinds of data: First, we collected data on the respondents' background characteristics, political interest, vote certainty (in a pre-VAA survey), and self-reported motivation for using a VAA (in a post-VAA survey). To measure vote certainty, we asked respondents which party they would vote for if there were a parliamentary election tomorrow. *Don't know* responses were coded as undecided. If a voter selected a party, they were asked how certain their choice was (possible responses were *not at all certain*, *quite certain*, or *very certain*). To measure political interest, respondents were asked: "How interested in politics would you say that you are?" Response options were *not at all interested*, *not very interested*, *somewhat interested*, or *very interested*. Second, we recorded how the respondents interacted with the VAA in terms of the options they clicked, the parties they explored, and how much time they spent on the various activities in the VAA. This rich set of objective behavioral data constitutes a key part of this article's contribution and is summarized in Figure A.1 in the Supplementary File.

The collected survey data contain two groups of respondents: those who were asked to use a VAA in addition to a survey (n = 1,011) and those who only answered a survey (n = 1,091). We focus our analysis on the first group because this allows us to combine respondents' background characteristics and VAA attitudes to their actual VAA behavior. VAA behavior was tracked by recording how users responded to VAA statements and how they navigated through the VAA results after having received the advice.

It is important to note that our study is based on participants who would use a VAA at their own initiative and participants who would not. Specifically, 63% of participants reported that they had used a VAA before (cf. Table A.6 in the Supplementary File). On the one hand, our study thereby avoids the potential idiosyncratic nature of a sample based on a specific VAA from a specific provider with a specific audience. On the other hand, the fact that not all of the respondents for whom we track how they use the VAA would actually use a VAA in their own time means that our data captures a combination of actual VAA use and how voters who do not use VAAs *would* use a VAA. This is a limitation, but the latter component also has value in itself, since VAA usage is increasing (see Garzia & Ferreira da Silva, 2026). Similarly, the data on motivations for using a VAA also capture actual motivations as well as why some voters would use a VAA at their own initiative, even though they have not done so yet.

4. Results

We present three sets of results: First, we show descriptive statistics that reveal how our users generally interact with VAAs using self-reported and behavioral data. Second, we analyze how these general patterns are associated with political interest. Third, we replicate the analyses from the second section but substitute political interest with vote choice certainty.

4.1. How Do Voters Interact with VAAs in General?

In this section, we present descriptive statistics on how users interact with a VAA. First, we describe the reasons the respondents themselves gave for using VAAs. Second, we turn to our behavioral measures and illustrate how much time voters spent filling out the VAA statements and, subsequently, exploring different party profiles. Third, we report the number and types of parties that users were interested in viewing detailed information about.

4.1.1. Voters' Self-Reported Motivations for Using VAAs

Table 1 summarizes what voters reported as their main motivation for using a VAA. We use the response options from van de Pol et al. (2014) and compare the responses in this study to ours. In doing so, we observe a much smaller proportion of respondents reporting that they use VAAs for entertainment (i.e., responding that it is an interesting test to reflect and discuss) and an increase in wishing to learn about parties' opinions. It is unclear whether those differences are due to the country context, the timing, or the representativeness of the sample. Regardless, the result is interesting because these two responses characterize checkers in the framework developed by van de Pol et al. In other words, we observe much less "checking" behavior in our sample compared to the Dutch sample from 2014. Instead, a majority of our respondents report using VAAs to learn about parties' opinions or to find out whom to vote for.

Table 1. Users' self-reported motivations for using a VAA.

Sample	Learn about parties' opinions	Check if my party agrees with me	Find out who/ what to vote for	Interesting test to reflect and discuss	Obs.
van de Pol et al. (2014)	16%	39%	17%	28%	52,999
Danish 2015 sample	29% (26%–31%)	34% (31%–37%)	25% (22%–28%)	12% (10%–14%)	1,011

Note: Cells report proportions with 95% confidence intervals in parentheses.

4.1.2. How Much Time Do Users Spend on Various Parts of the VAA?

We now turn to the respondents' actual behavior while using the VAA. As mentioned in Section 3, the VAA consisted of three parts: First, voters answered issue statements in order for the VAA algorithm to calculate the congruence between their stances and those of the Danish parties. Next, users were presented with the results, showing which parties the users were most congruent with on the VAA issues. On this page, users can click on the different parties to see the detailed issue profile for the party. Time spent viewing parties was included in the time spent on the results page. The study was designed so that voters had to remain on the results page for at least 30 seconds, and they had to open at least one party profile to proceed. As reported in the Supplementary File (Figure A.2) the most time was spent on filling out the issue positions (18 statements in total). The median user spent a bit less than 2.5 minutes on this task (144 seconds). Second, we see that users spent significantly more time on the results page (which includes viewing party profiles) than they were required to. The median user spent just above 1.5 minutes (92 seconds), with 50% of all users spending between 55 and 150 seconds. This indicates that users are quite interested in knowing which parties they agree with the most, also beyond the highest match. Finally, more than half of the users spent more than the required amount of time viewing one or more detailed party profiles. The median time spent on viewing party profiles was 40 seconds, with 50% of voters spending between 16 and 88 seconds there.

4.1.3. How Many and Which Party Profiles Do Users Open?

In terms of the overall number of parties viewed, 72.5% of the sample viewed only one party, and 27.5% viewed two or more. When interpreting these numbers, it is important to remember that participants had to open one profile to proceed in the survey. It is likely that many among the 72.5% would not have visited any

party profiles. However, these numbers tell us that about one-fourth of the participants explored at least one more party than what was mandatory. This group did not have to view the second party that they viewed. Thus, we can assume that they were legitimately interested in viewing more than one party. In other words, one-fourth of the users were not simply looking for a recommendation or some details on the recommended party's positions, nor were they simply checkers that just wanted to know about the positions of the party they initially intended to vote for. Instead, they explored multiple party options. We also see that this group spent more time viewing party profiles. In fact, the median time spent viewing party details was 36 seconds for the users who viewed just one party, but 66 seconds for those who looked at more than one party. More specifically, the median time for those who viewed two parties was 58 seconds. For three and four parties, it was 87.5 seconds and 103 seconds, respectively. The time spent viewing party profiles was higher by between 15 and 30 seconds for each additional party viewed (Figure A.2 in the Supplementary File).

Next, we report which party options the users chose to read about after receiving their VAA recommendation. van de Pol et al. (2014) find that a majority of users are checkers who want to see if their intended party choice agrees with them. Consistent with this, we see in Table 2 that a majority of users open the issue profile of the party they intended to vote for before taking the VAA, but also that a substantial percentage of users do not (45%). This distribution is similar when we look at those who open only one party profile compared to those who explore several parties, with 53% and 60% consulting the profile of their pre-VAA party choice, respectively. While a majority of users thus check their own party, a substantial proportion of users do not, and explore one or more parties they did not expect to vote for. Note that for 19% of the sample, the intended party choice was the same as the party recommended by the VAA.

Table 2. Number of parties opened and whether the user opened the party profile of the party they intended to vote for before taking the VAA.

Group	Did not open pre-vote party	Opened pre-vote party	Total
Opened one party profile	47% (43%–50%)	53% (50%–57%)	100% (n = 733) [72.5% of all users]
Opened several party profiles	40% (34%–46%)	60% (54%–66%)	100% (n = 278) [27.5% of all users]
All users	45% (42%–48%)	55% (52%–58%)	100% (n = 1,011)

Notes: Cells report row percentages with 95% CIs in parentheses; Pearson's χ^2 test $p = 0.063$.

Finally, we turn to the feature where users can see the parties' detailed explanations for their issue stances. Specifically, users had the option to click a button to see the party's own written explanation of its position on each of the issue statements. This button was used by 12.1% of the users (Table 3). This means that seven out of eight users did not use this feature. However, if we compare those who only opened one party profile to those who opened several party profiles, the latter group was twice as likely to use the "see written explanations" feature (about one in five vs. one in 10). Clearly, this group exhibits "exploring"-behavior.

Table 3. Share of users opening the parties' own written explanations.

Group	Did not open written explanations	Opened written explanations	Total
Opened one party profile	90% (88%–93%)	10% (7%–12%)	100% (n = 733)
Opened several party profiles	81% (77%–86%)	19% (14%–23%)	100% (n = 278)
All users	88% (86%–90%)	12% (10%–14%)	100% (n = 1,011)

Notes: Cells report row percentages with 95% CIs in parentheses; Pearson's χ^2 test $p < 0.001$.

4.2. Which User Characteristics Predict How Voters Use VAAs?

In this section, we analyze whether and how political interest and vote choice certainty condition the ways voters use VAAs. We present these analyses in two parts: The first part examines how political interest conditioned the respondents' self-reported reasons for using VAAs as well as their actual behavior while using the VAA. The second part replicates this analysis but substitutes political interest with vote choice certainty.

4.2.1. Does Political Interest Predict How Users Interact With VAAs?

A key expectation from van de Pol et al. (2014) is that politically interested voters are more likely to use VAAs as checkers who compare their own views to those of their preferred party or for entertainment purposes. Less interested voters, on the other hand, are more likely to use VAAs to find out whom to vote for. When looking at users' self-reported motivations for using VAAs in Table 4, there is clear evidence for the latter but mixed evidence for the former. Less interested voters are clearly more likely to report using VAAs to find out whom to vote for. In fact, the least interested voters are more than three times as likely to use this reason compared to the most interested voters (46% and 14%, respectively). However, while highly interested users are more likely than other users to report that they use VAAs for entertainment, they are no more likely than

Table 4. Political interest and self-reported motivations for using VAAs.

Political interest	Learn about parties' opinions	Check if my party agrees with me	Find out who/what to vote for	Interesting test to reflect/discuss	Total
Not at all interested	21% (13%–29%)	23% (15%–32%)	46% (36%–57%)	10% (3%–15%)	100% (n = 95)
Not very interested	27% (22%–31%)	32% (27%–37%)	31% (26%–36%)	10% (7%–13%)	100% (n = 336)
Somewhat interested	31% (27%–36%)	38% (33%–42%)	19% (15%–23%)	12% (9%–15%)	100% (n = 416)
Very interested	31% (24%–38%)	35% (27%–42%)	14% (9%–20%)	20% (14%–26%)	100% (n = 161)
All users	29% (26%–31%)	34% (31%–37%)	25% (22%–28%)	12% (10%–14%)	100% (n = 1,008)

Note: Pearson's χ^2 test $p < 0.001$.

moderately interested users to say that they use VAAs to check if their party agrees with them. Likewise, they are no less likely to report that they use VAAs to learn about the parties' opinions. This indicates that while some politically interested users are certainly checkers, a substantial number of them are not.

Politically interested voters do, however, show substantially more checking behavior when we measure their actual engagement with the VAA (Table 5). In fact, 71% of very interested participants checked the profile of the party they expected to vote for prior to using the VAA, while only a minority of those with no or only little political interest did so (23% and 48%, respectively).

Table 5. Political interest and whether the user opened the party profile of the party they intended to vote for before taking the VAA.

How interested would you say you are in politics?	Did not open pre-vote party profile	Opened pre-vote party profile	Total
Not at all interested	77% (68%–85%)	23% (15%–32%)	100% (n = 95)
Not very interested	52% (46%–57%)	48% (43%–54%)	100% (n = 336)
Somewhat interested	38% (34%–43%)	62% (57%–66%)	100% (n = 416)
Very interested	29% (22%–36%)	71% (64%–78%)	100% (n = 161)
All users	45% (42%–48%)	55% (52%–58%)	100% (n = 1,008)

Note: Cells report row percentages with 95% CIs in parentheses; Pearson's χ^2 test $p < 0.001$.

However, checking behavior does not exclude exploring behavior. To assess whether politically interested voters, in addition to checking, also use VAAs for exploring, Table 6 reports the respondents' propensity to open one or more party profiles by their political interest. The results clearly demonstrate that politically interested users are not merely checkers. In fact, if anything, they are more likely to open several party profiles than less interested users, with 32% of the most interested users exploring multiple parties (as opposed to 21% among the least interested). However, the differences are not statistically significant. What we see is

Table 6. Political interest and opening one or several party profiles.

Political interest	Opened one party profile	Opened several party profiles	Total
Not at all interested	79% (71%–87%)	21% (13%–29%)	100% (n = 95)
Not very interested	71% (66.6%–76.3%)	29% (23.7%–33.4%)	100% (n = 336)
Somewhat interested	74% (69.3%–77.8%)	26% (22.2%–30.7%)	100% (n = 416)
Very interested	68% (60%–75%)	32% (25%–40%)	100% (n = 161)
All users	72% (69.7%–75.3%)	28% (24.7%–30.3%)	100% (n = 1,008)

Note: Cells report row percentages with 95% CIs in parentheses; Pearson's χ^2 test $p = 0.2$.

tentative evidence that the very interested are the most likely to view several profiles, but they are not very different from users with the two medium levels of interest.

Finally, in terms of reading the parties' written explanations for their issue positions, we again find evidence that the very interested are no less likely to be explorers than less interested users (Table 7). In fact, the very interested users were again the most likely group to explore this option, but the differences to the less interested user groups are minor and not statistically significant. This corroborates our conclusion that politically interested users are not merely checkers and that they are certainly no less likely than less interested users to use VAAs to explore potentially relevant VAA information. While politically interested voters are generally not motivated to use VAAs to find out whom to vote for, some do seek out nuanced VAA information that they can use along with other nuanced information sources to decide whom to vote for.

Table 7. Political interest and opening the parties' written explanations.

Political interest	Did not open the written explanations	Opened written explanations	Total
Not at all interested	87% (81%–94%)	13% (6%–19%)	100% (n = 95)
Not very interested	90% (87%–94%)	10% (6%–13%)	100% (n = 336)
Somewhat interested	87% (83%–90%)	13% (10%–17%)	100% (n = 416)
Very interested	86% (81%–92%)	14% (8%–19%)	100% (n = 161)
All users	88% (86%–90%)	12% (10%–14%)	100% (n = 1,008)

Note: Cells report row percentages with 95% CIs in parentheses; Pearson's χ^2 test $p = 0.4$.

4.2.2. Does Vote Certainty Predict How Users Interact with VAAs?

van de Pol et al. (2014) suggest that politically undecided voters generally use VAAs to find out whom to vote for. Our results corroborate this expectation in the sense that undecided and uncertain users are much more likely to report this reason for using VAAs than users who have a clearer expectation about whom they will vote for (Table 8). In this sense, they can be characterized as explorers, but they are less likely to report using VAAs to learn about parties' opinions. This suggests an "exploring" type of behavior among the undecided, where they mainly rely on the advice to inform their vote choice. This is consistent with existing evidence that these users are influenced more by voting advice than users who have a clearer vote choice expectation (Germann et al., 2023; Tromborg & Albertsen, 2023).

Table 8. Vote choice certainty and self-reported motivations for using VAAs.

Pre-vote certainty	Learn about parties' opinions	Check if my party agrees with me	Find out who/what to vote for	Interesting test to reflect/discuss	Total
Undecided (No pre-vote party)	25% (18%–31%)	19% (13%–26%)	46% (38%–54%)	11% (6%–16%)	100% (n = 151)
Not at all certain (Has a pre-vote party)	20% (12%–28%)	39% (29%–49%)	36% (26%–46%)	5% (1%–9%)	100% (n = 100)
Quite certain (Has a pre-vote party)	27% (22%–31%)	39% (34%–44%)	22% (17%–26%)	13% (9%–16%)	100% (n = 366)
Very certain (Has a pre-vote party)	34% (29%–39%)	38% (32%–43%)	13% (10%–17%)	15% (11%–19%)	100% (n = 304)
All users*	28% (25%–31%)	36% (32%–39%)	24% (22%–27%)	12% (10%–14%)	100% (n = 921)

Notes: This table only uses data from those users who intended to vote for a party or did not know what party to vote for (N = 921). Pearson's χ^2 test $p < 0.001$.

However, when we zoom in on undecided voters' actual VAA behavior, the picture is more nuanced. Table 9 shows how vote choice certainty is related to the number of party profiles opened. The results show that undecided and uncertain users are the most likely to explore several party profiles as well. Especially those that have an intended party choice but are not at all certain are nearly twice as likely as those who are very certain about their vote choice (41% versus 23%). If uncertain and undecided voters also factor this information about non-recommended parties into their vote decision, then previous research has likely underestimated the effect of VAA advice on these voters—even if the estimated effects are already quite large for this group.

Table 9. Vote choice certainty and opening one or several party profiles.

Pre-vote certainty	Opened one party profile	Opened several party profiles	Total
Undecided (No pre-vote party)	70% (63%–78%)	30% (22%–37%)	100% (n = 151)
Not at all certain (Has a pre-vote party)	59% (49%–69%)	41% (31%–51%)	100% (n = 100)
Quite certain (Has a pre-vote party)	73% (68%–78%)	27% (23%–32%)	100% (n = 366)
Very certain (Has a pre-vote party)	77% (72%–81%)	23% (19%–28%)	100% (n = 304)
All users*	72% (69%–75%)	28% (25%–31%)	100% (n = 921)

Notes: This table only uses data from those users who intended to vote for a party or did not know what party to vote for (N = 921). Pearson's χ^2 test $p = 0.007$.

Finally, we find that undecided voters without an intended party choice are no more likely to read parties' written explanations than those who are quite certain or very certain about their vote choice (Table 10). However, those who have some idea whom they will vote for—but are not at all certain—are more likely to open written explanations than the remaining groups. Approximately one in five from this group engaged with the written explanations, while it was one in eight among other respondents. These numbers are likely conservative estimates of real-world behavior because they rely on paid survey respondents with no

incentive to engage more with the VAA than necessary. In sum, our findings for uncertain and undecided voters corroborate van de Pol et al.'s (2014) result that they tend to use VAAs to find out whom to vote for and suggest that they do not merely rely on VAA advice but also explore more nuanced VAA information about their party options.

Table 10. Vote choice certainty and opening parties' own written explanations.

Pre-vote certainty	Did not open the written explanations	Opened written explanations	Total
Undecided (No pre-vote party)	89% (84%–94%)	11% (6%–16%)	100% (n = 151)
Not at all certain (Has a pre-vote party)	82% (74%–90%)	18% (10%–26%)	100% (n = 100)
Quite certain (Has a pre-vote party)	90% (87%–94%)	10% (7%–13%)	100% (n = 366)
Very certain (Has a pre-vote party)	88% (85%–92%)	12% (8%–16%)	100% (n = 304)
All users*	88% (86%–91%)	12% (9%–14%)	100% (n = 921)

Notes: This table only uses data from those users who intended to vote for a party or did not know what party to vote for (N = 921); Pearson's χ^2 test p = 0.14.

5. Conclusion

In this article, we present novel behavioral data on how users interact with VAAs. We corroborate previous findings that many politically interested voters are motivated to use VAAs to check that they agree with their party or for entertainment and that undecided voters frequently use VAAs to find out whom to vote for. However, when we look at these users' actual behavior, we also find that a substantial share of interested, undecided, and uncertain voters also use VAAs in a more time-consuming way to explore the detailed answers of the parties they are able to vote for. This suggests that many VAA users in these groups are not merely checkers and doubters, but also explorers who obtain nuanced information from VAAs by using their additional features.

While this article comes a long way towards opening the black box of understanding users' VAA behavior, there are important ways in which future research can further strengthen our knowledge in this area. First, the sample is not restricted to voters who seek out VAAs in their own time. Therefore, our results can be used to infer how the average voting-age citizen interacts with VAAs, but we cannot know exactly how these results translate to the subset of voters who actually use VAAs on their own initiative. Second, and related, we ask participants to use a VAA and require them to spend some time on the results. It would be highly useful to track the exploring behavior of voters when they encounter VAAs in their own time, although this may be challenging in terms of obtaining participant consent and avoiding new sample selection issues. Third, we have only explored some VAA features, but there are many others that we have not assessed. For example, some VAAs use the VAA statement responses to graph the user's ideological placement in a two-dimensional space along with those of their candidates or parties. We do not know whether and how users engage with this type of information. Finally, future studies could fruitfully combine the kind of behavioral data collected

for this study with causal estimates of how VAAs affected users' vote choice. This would be a strong next step in linking how voters interact with VAAs with how they are affected by them.

In conclusion, the findings have important implications for both researchers and practitioners. By mapping out how users interact with VAAs, our findings support the idea that VAAs can serve multiple different informational roles for different types of voters. This has implications for theories on the role that information tools such as VAAs play in democracies. Moreover, our findings that voters with different levels of political interest and uncertainty are different in terms of how they approach and interact with VAAs have implications for theories on why VAA advice has heterogeneous effects. The findings are in line with prior research (Germann et al., 2023; Tromborg & Albertsen, 2023) and suggest that previous results may underestimate the true effects of VAA use on politically interested and undecided or uncertain voters. Finally, for designers and publishers of VAAs, our findings suggest that there is an audience for nuanced VAA features, such as the opportunity to explore all the parties' positions, because many voters actually interact with these options. Therefore, VAAs designers should take into consideration that there are different types of VAAs users, as there are voters with varying interests and motivations. Providing a streamlined user experience with limited user interactivity might not be the way to serve the growing and heterogeneous user base of these tools. Finally, low-interest users are more likely to be influenced by VAA advice, but they engage less with the more nuanced VAA functions (especially the least interested users). Consequently, it is critical that the initial advice is as methodologically sound, visually well-presented, and comprehensive as possible.

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Conflict of Interests

In this article, editorial decisions were undertaken by Diego Garzia (University of Lausanne/Bologna University), Stefan Marschall (Heinrich Heine University Düsseldorf), and Andreas Albertsen (Aarhus University).

Data Availability

Replication materials will be made available on the corresponding author's website: www.mathiastromborg.com/articles

LLMs Disclosure

ChatGPT was used to check the grammar and spelling of some paragraphs.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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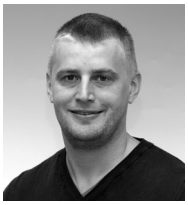

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