

Oxford Research Encyclopedia of Politics

Voting Advice Applications

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Subject: Political Behavior Online Publication Date: Mar 2019

DOI: 10.1093/acrefore/9780190228637.013.620

Summary and Keywords

Voting Advice Applications (VAAs) are online tools that assist citizens with their voting decisions. They are offered to voters before elections in many countries and have experienced remarkable success. Recently flourishing research on VAAs addresses this phenomenon and provides explanations for the dissemination and popularity of these tools. Moreover, VAAs have been analyzed regarding their effects on political parties, candidates, and on voters in regard to their electoral behavior. Research shows that using a VAA indeed makes a difference, while the effect depends strongly on the way a VAA is designed and by whom it is used. The abundance of data generated by VAAs bears potential for comparative studies of public opinion and party systems over time and across countries, and thereby bridges research on VAAs to general questions of political science research.

Keywords: campaigns, elections, Internet and politics, parties, party systems, representation, turnout, vote choice

Introduction

Voting Advice Applications (VAAs) have become a vital part of online election campaigns worldwide. In the increasingly complex world of politics, which involves new and complex issues, VAAs assist and inform voters by comparing their policy preferences with the political stances of parties or candidates running for office. The users of these tools mark their positions on a range of policy statements. After comparing the individual's answers to the positions of each party or candidate, the application generates a rank-ordered list or a graph indicating which party or candidate is located closest to the user's policy preferences.

These applications, originally developed in the 1980s as paper-and-pencil civic education questionnaires, have mushroomed to meet strong demand by electorates in many countries. With their expansion and high usage rates, VAAs attracted the attention of social scientists and researchers from other disciplines such as computer science, psychology, or design studies.¹ One particular speciality of research on VAAs is that,

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contrary to other online phenomena, conducting research and building the tools are very often intermingled. Quite a few VAAs have been constructed by social scientists themselves. This provides the researchers with an opportunity to collect valuable data by constructing tools according to their research interests and needs, such as including survey items in the questionnaire or manipulating the design quasi-experimentally, thereby controlling for respective effects.

Broadly speaking, VAA research has taken two routes. The core branch of research primarily focuses on VAAs themselves by analyzing their users, designs, methods, and concrete effects. A more recent strand of research uses VAA data to address other issues of political science, such as studying changes in the political space, comparing party systems, and analyzing the challenges of political representation in changing societies.

Against the background of this “dual use” of VAA research—both to understand the VAA phenomenon and to draw on VAA data for other research purposes—this article proceeds as follows. A profile of VAAs to distinguish them from the abundance of other political online applications is followed by a description of the worldwide proliferation and popularity of these tools. The latter bridges two important topics of VAA research: the effects of the tools and their design (as well as how the design influences effects). The discussion continues with analysis of how representation relates to the study of VAAs. We conclude by discussing future avenues of VAA research.

What Is a Voting Advice Application?

Voting Advice Applications share a common operating principle. They compare the positions of parties or candidates on an array of policy statements to the positions of the voters. At the end, VAAs calculate and display a rank-ordered list or graph indicating the closeness of parties or candidates to the voter within an n-dimensional issue space. The example in Figure 1 is based on the EU Profiler created for the 2009 elections to the European Parliament. After answering the VAA questions, our fictional British user is presented with the percentage agreement with each of the parties running in that election. In this case, the best match is with the Labour Party and the worst match is with the British National Party.

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	Party	Match
1	 Lab	69.8 % 
2	 Con	69.0 % 
3	 LD	68.5 % 
4	 UKIP	61.5 % 
5	 Green	57.4 % 
6	 BNP	52.8 % 

Figure 1. Percentage agreement with each party in the United Kingdom.

Source: www.euprofiler.eu.

economic dimension, and the vertical axis depicts party positions on social/cultural issues. The bullseye signifies this voter's own position, which locates her between the Conservatives and the Labour Party. A framework like this helps the average voter to see their own views in relation to the parties.

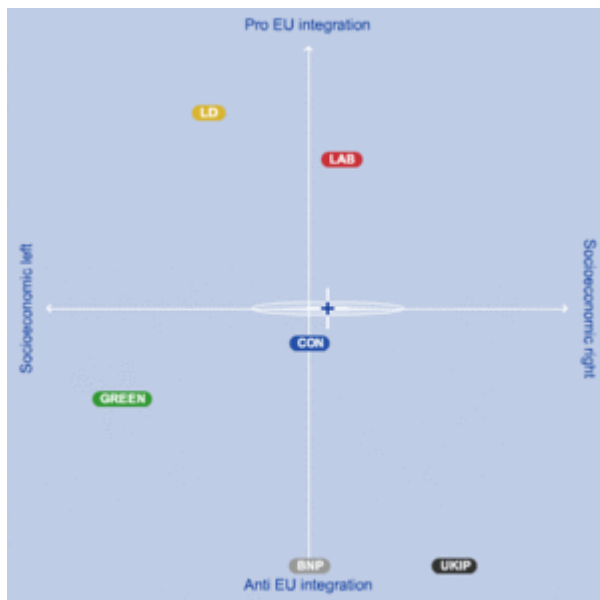


Figure 2. Positioning of the parties and users in a two-dimensional space.

Source: www.euprofiler.eu.

assessments of candidates' qualities. Although they share these basic characteristics, the group of existing VAAs is quite heterogeneous concerning the features described in this section.

Statement Selection and Number of Statements

The policy statements are at the heart of all VAAs. With some, the production of statements is solely done by experts such as journalists and political scientists who draw on party election platforms. Some VAAs include party actors in the production of the

In addition, VAAs often offer voters a multidimensional picture of the party system and their own location in relation to the parties. Figure 2 presents an example from the EU Profiler for the same British voter. The horizontal axis presents party positions on the

Beyond these basic features, VAAs have several supplementary characteristics. Usually, VAAs are developed by "nonparty" organizations. Most VAA providers do not pursue a commercial interest because they have a nonprofit civic education or academic background. Regarding their content, VAAs are predictive and issue-oriented; they restrict themselves to current policy issues leaving aside retrospective evaluations of government performance as well as

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statements, for example by inviting party representatives to VAA development workshops. In the German Wahl-O-Mat first and second-time voters play a crucial role as members of an editorial board that selects and formulates the statements.

VAA's also differ in the number of statements they offer to users. As with many other VAA's, the Dutch StemWijzer features around 25 to 30 statements. However, it is not uncommon to find lists of policy questions encompassing 45 to 50 statements. Tools like the Swiss smartvote leave it to the choice of the users as to whether they prefer to respond to a small or large number of statements. In any case, a VAA's issue statements should cover the spectrum of most important issues of an election campaign (e.g., based on analyses of the election platforms) and reveal the different dimensions of competition in the political system for which the VAA is designed. As a result, policy statements for which no disagreement can be discerned among the parties (e.g., valence issues) are typically excluded from VAA's.

Inclusion Criteria for Parties and Candidates

VAA's use varied standards in the selection of candidates and parties they include. Tools like the German Wahl-O-Mat encompass all candidates or parties that compete against each other in the elections, whereas VAA's like the Belgian De Stemtest take into account only a selection of parties with whose positions the voter can compare herself. If the selective approach is applied, a dominant criterion is whether parties already have seats in parliament. Party selection depends strongly on the fragmentation of the respective party system and the total number of parties taking part in an election.

Answer Categories and Weighting of Propositions

VAA's provide a range of scales for users to express their positions on issue statements. Most of them simply offer three response options (e.g., "agree," "disagree," "neutral"), though an increasing proportion of VAA's now offer five answer options (e.g., Likert-scale ranging from "strongly agree" to "strongly disagree" plus a "no opinion" option). Nearly all VAA's allow weighting issue questions by their importance to the individual user. The importance assigned to a given number of statements is taken into account in the calculation of the results.

Identification of the Parties' Positions

Roughly speaking, three methods of identifying policy positions of the parties and candidates are applied by different VAA's. One option is to determine party issue positions solely from an analysis of the party platforms. A second option asks the parties to position themselves on the issues, although their responses might be subject to corrections by experts. In a third option, the parties are invited to identify their issue positions without being subject to any changes by the tool's providers. This applies especially for VAA's that include candidates because it is not possible to externally identify and verify their political stances as they may diverge from the parties' positions.

Calculation and Presentation of the Results

Different methods are used to compute the proximity of the voters' position to the stances of the parties or candidates, *inter alia*, depending on the answer scales applied. The predominant method measures the distances between the positions of the parties/candidates and those of the users by using the principle of shorter distance (also known as "Manhattan" or "city block" distance). In this approach, integral distance values (0/1/2) are assigned to measure the space between the position of a party or candidate and the position of the user. Alternative methods are to simply count agreements (calculating the number of statements parties/candidates and users agree on) and to compute the Euclidian distance (the distance between parties'/candidates' and users' positions in a one- or multidimensional metric space). The final result of the summed distances between the users and the parties/candidates can be displayed in different ways. One frequently used variant is a one-dimensional ranking list in which the top position indicates the party with the highest proximity (see Figure 1). Alternatively, the VAA depicts the relationship between party/candidate and voter on a more complex graphic that illustrates proximity or distance in a bi- or multidimensional political space (Figure 2).

History and Diffusion of Voting Advice Applications

The Dutch StemWijzer was developed in 1989 in a paper-and-pencil version and is considered the ancestor to all VAAs. It consisted of a booklet containing 60 statements taken from political party programs and a diskette and was primarily aimed at junior high school education. An Internet-based StemWijzer was released a few years later for the 1998 Dutch parliamentary election. Despite the rather wide outreach of the project and heavy publicity activities, its use among Dutch voters was limited. Indeed, only 6,500 voters used the online version of the VAA in 1998. During the two consecutive elections in 2002 and 2003, however, the StemWijzer took full advantage of the massive spread of Internet communication among the general population and grew into the most used political website in the Netherlands. It reached out to over two million users in the aftermath of both elections.

With the beginning of the new millennium, the highly successful experience of StemWijzer led to the spread of VAAs into several other countries. In Germany, the Wahl-O-Mat was fielded for the first time in 2002 and has attracted more than 50 million users ever since. Other versions of the Dutch pioneering VAA also appeared in Bulgaria (Glasovoditel) and Switzerland (Politarena). The Swiss application was challenged in 2003 by smartvote, the first version of which served over 250,000 users, and in only four years its usage figures had increased almost fourfold. Belgium was inspired by the Dutch example as well. In 2003, the Flemish public broadcaster VRT launched Doe de Stemtest!

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for the elections of that year. Due to its intrinsic connection with the homonym TV show, the Flemish VAA issued over 840,000 voting recommendations during that campaign.

A similar media-driven development occurred in Finland, where the Finnish Public Broadcasting Company had developed a VAA already in 1996. Following this example, the largest daily newspaper in the country, *Helsingin Sanomat*, built its own application for the 1999 European Parliament elections. In 2001, as many as 11 different VAAs were available to Finnish voters. This figure rose to more than 20 during the 2007 election campaign, with the most popular among these applications attracting more than a million users.

In the United States, several VAAs have been offered for the presidential and congressional elections. Tools like Votesmart.org, which keeps track of the voting records of congressional candidates, are embedded in a broader context of civil-society-based transparency initiatives. More recently, tools like Society.com have been developed to provide support to voters in low-information contests at the local level, where the aid of a VAA is most needed.

VAAs have become extremely popular web applications in most of the aforementioned countries. In absolute numbers, the German *Wahl-O-Mat* still takes the lead, with more than 15.6 million usages before the 2017 federal elections. In relative terms, usage in the Netherlands, Belgium, or Finland is at least as impressive. In the run-up to the 2017 parliamentary election, the Dutch *StemWijzer* was used 6.8 million times.

Obviously, the number of usages does not equal the number of users. As a matter of fact, a large number of VAA users are known to use the application several times. Nationally representative samples give a better approximation of the number of VAA users in European countries. Figure 3 maps the spread of VAAs among the voting population in all those countries in which post-election surveys asked their respondents whether they have used one (or more) VAAs during the national election campaign.

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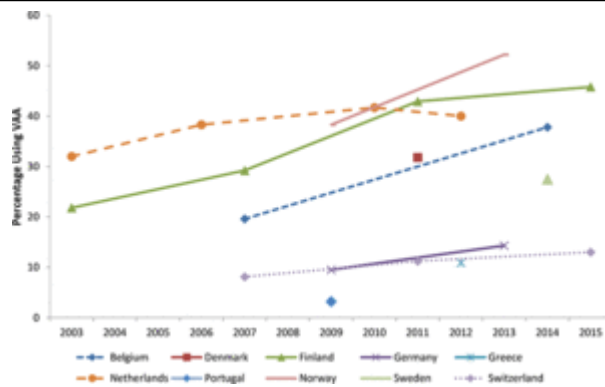


Figure 3. Proportion of eligible voters using VAAs during the campaign.

Note: Figure entries represent the percentage of respondents in the respective National Election Study declaring to have used (at least) a VAA during the campaign.

Besides the unequivocal upward trend in each country, it is worth observing that in some of the early-adopter countries the proportion of eligible voters using VAAs ranges between one-third and one-half. Still, there is high variance across countries, which indicates that certain conditions seem to be beneficial for the establishment of these tools—such as the electoral and party system

of a country.

VAAs continue to mushroom across Europe and beyond. An attempt to map the distribution of national and transnational VAAs in 2014 found almost complete coverage of the European democracies (Marschall & Garzia, 2014). Most European countries have multiple VAAs operating. On the basis of a recent census conducted by the European Consortium for Political Research (ECPR) VAA Research Network that extended beyond European borders, the global spread of this phenomenon has become even more evident.² VAAs have been deployed in North America (Canada, Mexico), Oceania (Australia, New Zealand), North Africa/Middle East (Tunisia, Egypt, Morocco, Israel, Turkey), South America (Brazil, Peru, Venezuela, Ecuador), and Asia (Japan, Taiwan, South Korea). VAAs are truly a global phenomenon. The growing popularity of these tools has instigated research on the question of whether users are affected by their VAA experiences.

The Impact of Voting Advice Applications on Their Users

Given the high popularity of VAAs, the question of whether they make a difference for their users has become a pressing one—and one that stands at the core of developing of VAAs. Originally embedded in citizenship education initiatives, VAAs are intended to bear an impact on citizens. Out of this civic education perspective, one central purpose of VAAs is to strengthen the capacity of citizens to engage in the political process. Since VAAs are by definition coupled with upcoming elections, the effects of VAAs on electoral behavior in terms of the willingness to participate in elections and the concrete electoral decision have become a second, normatively grounded, concern.

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Accordingly, studies on the effects and effectiveness of VAAs have chosen political knowledge, interest, participation in elections, and vote choice as dependent variables. Taking a microlevel perspective, that is, analyzing and measuring change with the individual users, part of this research has tried to identify respective macro effects, such as on aggregate rates of electoral participation, for example.

Impact on Knowledge and Political Interest

Studies on VAA effects on political knowledge and interest address the cognitive mechanisms that are triggered by using the tools. So far, only a few studies have addressed the effects of VAA usage on political interest. In most cases, relevant observations have been byproducts of analyses that focus on other questions. An almost “classic” early and robust finding of VAA research is that on average, typical users are more interested in politics than nonusers (Marschall, 2014). Some studies have shown that a strong political interest could result in using a VAA. For example, Hirzalla, van Zoonen, and Ridder (2010) contend that political interest is a crucial factor to explain why voters resort to VAAs in the first place.

We face a similar discussion when turning to the relationship between political knowledge and VAA usage. Again, the typical cross-sectional finding is that VAA users are characterized by a higher degree of political knowledge. Then again, a study of the 2012 Dutch election found that users felt that the VAA improved their political knowledge (Krouwel, Holleman, van de Pol, & Vreese, 2015). However, their cross-sectional analysis also found discrepancies between factual and perceptual measurements of the effect of VAAs, thus raising doubts about whether VAAs shape actual knowledge or just the perception that they do. Addressing the question of the causal relationship, Schultze (2014) showed that the usage of the German Wahl-O-Mat seemed to exert a positive effect on the users’ knowledge about the parties’ policy positions.

Impact on Electoral Participation

The civic voluntarism model postulates that political resources, such as information and knowledge, are a key precondition for participation. With more information, citizens are better able to make sense of their own positions relative to the electoral supply and thus are more likely to cast ballots in elections. In this respect, the wide amount of readily available information about politics and political parties provided by VAAs contributes to a reduction in the transactional costs involved in gathering relevant political information and increasing the likelihood of voting in turn.

The first studies to investigate the impact of VAAs on electoral participation were conducted by research teams led by Andreas Ladner in Switzerland and Stefan Marschall in Germany. These initial studies, the results of which are presented in the seminal volume edited by Cedroni and Garzia (2010), show that in both the 2005 and the 2009 German federal elections, one user out of ten declared an increased motivation to vote after using the Wahl-O-Mat. In the 2007 Swiss Federal election, over 40% of respondents

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declared that using Smartvote had a decisive or at least slight influence on their decision to go to the polls.

A critical issue with these findings lies in their exclusive reliance on opt-in surveys administered to users immediately after using the VAA. In other words, the influence exerted by the VAA on users is measured through self-assessment and only among those who are willing to complete the opt-in survey. In order to address this critical issue, a growing number of studies have resorted to national election study data. Working with nationally representative samples substantially increases the external validity of the findings. At the same time, the structure of postelection surveys allows for factual measures of VAA usage and actual voting behavior. Gemenis and Rosema's (2014) analysis of Dutch Parliamentary Election Study data estimated, by means of propensity score matching, that the presence of VAAs was responsible for 4.4% of the reported turnout in the 2006 election. Resorting to the German Longitudinal Election Study, Marschall and Schultze (2012) showed that Wahl-O-Mat users were 6% more likely to cast a ballot as compared to nonusers. Another analysis by Dinas, Trechsel, and Vassil (2014) on European Election Study data indicated that even after controlling for a wide set of sociostructural, attitudinal, and behavioral variables, the individual-level probability to cast a vote in the European parliamentary election of 2009 was 14 percentage points higher for VAA users as compared to nonusers. A comparative study by Garzia, Trechsel, and De Angelis (2017) that relied on 12 national election study data sets from Finland, Germany, the Netherlands, and Switzerland, found that, even after controlling for an exhaustive list of individual-level predictors of electoral participation, VAA use increased users' probability to cast a vote in elections in a proportion ranging between 2 and 12 percentage points (see Figure 4).

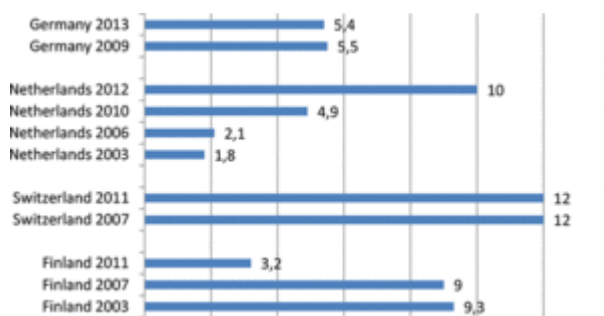


Figure 4. Increase in predicted probability (%) of casting a vote—VAA users vs. nonusers.

From Garzia, Trechsel, and De Angelis (2017).

These studies have brought forward numerous methodological advances that allow better control of observational data in a context plagued by self-selection into the VAA (e.g., Heckman selection models, propensity score matching, etc.).

Nonetheless, the ideal scenario for a causal

assessment of VAA effects on users' patterns of electoral mobilization remains the random assignment of the treatment in a proper experimental setting. Garzia, Trechsel, and De Angelis (2017) presented the results from an experiment performed in the context of the 2013 Italian parliamentary election. The Italian case could be considered an ideal "laboratory" for the assessment of VAA effects in the context of real-world elections, given the absence of a proper VAA made available to Italian voters in that election. Through an invitation-only design, the experimental VAA platform was made accessible

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only to the respondents in the treatment group. The experiment by and large confirmed the findings from the available cross-sectional studies, with the proportion of mobilized voters among VAA users more than 10 percentage points higher as compared to nonusers in the control group.

Impact on Vote Choice

Besides their ability to motivate undecided voters to participate in elections, VAAs have also been found to affect actual patterns of vote choice. By measuring and communicating the degree of match between users' and parties' issue positions, VAAs may lead users to a cognitive process that can, under certain conditions, affect their partisan preferences accordingly. Alvarez, Levin, Trechsel, and Mair (2014) proposed a theoretical approach to the study of potential effects of VAAs on partisan preferences building on the concept of "representative deficit." This is to be intended as the degree to which users fail to match the political supply. The lower the match between the user's issue preferences and the parties' offer, the higher the representative deficit. In this sense, the representative deficit is precisely the conditioning mechanism that makes users more likely to take their revealed preferences into account. Likewise, Wall, Krouwel, and Vitiello (2014) suggest that one of the crucial conditions under which users are willing to take into account the VAA advice is the degree of closeness with the suggested party (that is, a low representative deficit). When VAAs recommend a party that is seriously contemplated by the user, the user is demonstrably more likely to go on to vote for the recommended party (Pianzola, Trechsel, Vassil, Schwerdt, & Alvarez, 2019). Within such framework, VAA effects on vote choice are evidently more complicated to grasp vis-à-vis mobilization effects. A more complex operationalization is needed, as an intricate interaction is assumed between the intention to participate in the election in the first place, the propensity to vote for a given party, and the specific VAA result, which could either confirm or contradict the voter's preexisting party preference. Even more complex is to predict VAA effects in a candidate-based electoral environment, as the concrete positions of the candidates running for election are often unknown to the voters and might even contradict the positions of the parties they are running for (if they are associated with a party at all). So party positions cannot be used as a proxy for candidate positions. For these cases we can assume even more influence by a VAA result.

In their seminal analysis of the Flemish Doe de Stemtest VAA, Walgrave, van Aelst, and Nuytemans (2008) found that the reported intention of changing behavior as a result of having used a VAA was not always (nor often) matched with actual changes in voting behavior. Focusing on the intention to vote for a party at $t-1$ but then voting another one at t due to VAA usage (swing voting), they concluded that "only half of the people who said [the VAA] made them doubt about their vote (8%) actually changed preferences. For the other half, [the VAA] inspired doubt but did not have electoral consequences. Even among the small group of people saying that [the VAA] really made them change their mind (1%), one-third did not change their mind at all and remained loyal" (Walgrave et al., 2008, pp. 65–66). Interestingly, similar figures are reported in another study of VAA impact, this time focusing on patterns of party preferences alone. In their cross-national

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analysis of the 2009 European Parliament election, Alvarez et al. (2014) found about 8% of EU Profiler users reshuffled their party preferences to become consistent with the top party proposed by the VAA. Unfortunately, their prepost design does not allow confirmation of the exact proportion of users remaining loyal in spite of a measurable VAA effect on preferences.

More recent studies have pointed out that VAA effects on vote choice could be spurious because of common antecedent factors of the obtained advice and party choice (e.g., party choice in previous elections, issue preferences, campaign effects, etc.). Through a sophisticated research design including a three-wave panel survey and media content data for the Dutch national election campaigns of 2010 and 2012, Kleinnijenhuis, van de Pol, van Hoof, and Krouwel (2017) were able to uncover genuine VAA effects, especially on doubting voters, in addition to the spurious correlation resulting from common antecedent factors.

Such small-scale, direct forms of impact do not exclude the possibility for VAAs to exert more subtle, indirect effects on users. In the longer run, VAAs might help to improve users' sense of identification with another party, thus facilitating a change of party choice in the future. Similarly, VAAs can draw the user's attention to a party beyond the one(s) he considered voting for, as well as to "minor" parties receiving only limited exposure in contemporary campaign dynamics. These, as well as other potential long-term effects, have been repeatedly suggested by existing scholarship as the way forward for future analyses. As of today, however, no empirical study has ventured beyond the conventional temporal limits demarcated by a single election campaign.

The "Proper" Construction of a Voting Advice Application

If VAAs are increasingly used and if they do make a difference on the voters in terms of cognitive as well as behavioral influences, the key question becomes whether the advice VAAs provide to their users is reliable and unbiased.³ This is where the methodology of the tool comes into play. As already mentioned, to match parties/candidates with voters by the logic of VAAs, several methodical decisions have to be made. These methodological choices could have a strong impact on whether and how the users are influenced in their political attitudes and behavior.

This section focuses on the four aspects that receive the most attention in the available empirical literature: (1) the choice of the set of statements and the formulation of the statements, (2) the way the party positions are identified, (3) the algorithm used to calculate the proximity between the voters' and parties' positions, and (4) the manner in which the results are displayed.

Selection and Formulation of Statements

Early research provided clear evidence that the respective choice, composition, and wording of statements make a difference on the result indicated by a VAA. Drawing on a large-scale simulation of 500,000 different configurations of 36 statements and on a random sample of Belgian voters, Walgrave, Nuytemans, and Pepermans (2009) demonstrated the massive impact that the specific selection of statements can exert on the voting advice presented to users. According to their results, every single configuration of statements produced a benefit for some parties, depending on the specific statement composition. In some instances, certain parties' shares of VAA advices multiplied several times between the least and the most favorable statement configuration. Another finding relates to the ideological content of the statements in the VAA. Lefevere and Walgrave (2014) found that when more left-right statements were included, more left-wing voters received the advice to vote for left-wing parties and the reverse was true on the right. They also found that the inclusion of a large number of left-right statements provided a simultaneous advantage for parties with more extreme positions on this dimension. Finally, the concrete formulation of the statements could make a difference. Holleman, Kamoen, Krouwel, van de Pol, and Vreese (2016) showed that the wording of a statement has a strong effect on the answer behavior. Implicit as well as explicit negations in VAAs have a measurable impact, particularly on less sophisticated users.

Measuring Party (and Candidate) Positions

The makers of VAAs also apply different methods to measure party positions. Customarily, either the parties themselves deliver their positions on the issues or the party stances are settled by experts, for example, on the basis of the party platforms. In comparing alternative methods of party placement, Gemenis and van Ham (2014) considered self-placement impractical in many ways, since party response is generally low in non-VAA countries. Even where party response rates are high, strategic manipulation remains a concrete risk. Mainstream parties, especially during election campaigns, have strong incentives to appear more centrist than they actually are. This problem does not seem to be mitigated by resorting to expert surveys only. In such an approach, agreement varies substantially from issue to issue, while expert disagreement often leads to centrist estimates.

To avoid the respective drawbacks, the team of the Dutch VAA "Kieskompas" devised an "iterative" method to measure party positions that consisted of a combination of expert judgment and party self-placement (Krouwel & van Elfrinkhof, 2014). This model has been adopted in numerous countries and was applied to a supranational (European) election with the EU Profiler in 2009 (Trechsel & Mair, 2011) and again with **euandi** in 2014 (Garzia, Trechsel, & De Sio, 2017).

The iterative method attempts to maximize the strengths of combining different methodologies while also trying to counterbalance their respective weaknesses. Expert

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coding and party self-placement are carried out independently, but the respective results are subsequently compared to introduce a control mechanism. The coding process itself goes beyond the exclusive reliance on the current election manifesto by encompassing a hierarchy of sources to reduce the likelihood that a party cannot be placed on a given policy statement.

According to Gemenis and van Ham (2014), the promise of counterbalancing the weaknesses of both self-placement and expert judgment is “generally satisfied” yet with the caveat of possible noncooperation on behalf of the parties. To overcome this limitation, the EU Vox team pioneered the use of the Delphi method (Gemenis, 2015), which implies the anonymous iteration with feedback over two rounds in view of increasing the consensus among experts beyond those reached in conventional expert surveys.

As mentioned previously, the positioning becomes even more challenging when it comes to identifying the positions of individual candidates instead of parties. Given the number of candidates and a lack of reliable sources for their policy perspectives, the self-placement seems to be the method of first choice for candidate-based VAAs.

Algorithms and Visualization of Proximity

Another methodical debate has investigated the algorithms used to calculate the policy proximity/distance between parties and users. In VAA practice, different approaches are applied. The most prominent discussion concerns the question of whether or not to use dimensions to calculate and display party-user proximity. Louwerse and Rosema’s (2014) analysis of the answers provided by users in the 2010 edition of StemWijzer compared the simple agreement method employed by the original application with several spatial models that are central in other VAAs (i.e., Euclidean distance and city block distance). Their results supported the idea that algorithm design has a significant effect. As a matter of fact, up to 90% of users would have received different voting recommendations if another method for calculating the match between voter and party had been adopted. Mendez’s (2012) study on the effects of algorithms came to the same conclusion: algorithms make a difference. Starting from an analysis of four competing VAA models, Mendez proposed a “hybrid” algorithm that would overcome the shortcomings of the different approaches.

In turn, the algorithm used has implications on the way the VAA results (i.e., the summed proximity between the user and the parties) can be displayed. Germann and Mendez (2016) recently challenged some of the fundamental psychometric properties of low-dimensional spatial representations, such as unidimensionality and reliability. Against this background, they proposed dynamic scale validation as a method to empirically validate and improve VAA spatial maps. Drawing on data generated from three actual VAAs developed by the “Preference Matcher” consortium, Germann and Mendez (2016) made the case for user data generated soon after the launch of the VAA as a means to evaluate (and potentially adjust) the spatial maps with which issue proximity is shown to users.

Representation and Party Politics Research With VAA-Generated Data

Another product of VAAs is data for studies on representation and party politics. VAAs document party positions on an array of relevant policy issues as well as collecting data on the attitudes of citizens regarding these questions.

Given that most VAAs entail a number of identical or at least very similar policy questions over time—and in some instances even over countries—it is possible to engage in longitudinal (and cross-country) analyses that can capture the changes in the dimensionality of political spaces. For instance, longitudinal VAA party data is used to look at stability and change of party positions across time and their respective explanatory factors (Dalton, 2016).

Understanding the positions of parties and candidates in VAAs as “promises” given before elections, the data on party positions are also used to study whether parties have kept these promises once they have entered government (Fivaz, Louwerse, & Schwarz, 2014). Again, the nature of VAA data allows for comparative studies, which could influence whether parties stick to their promises or not. Such an analysis is especially instructive for candidate-centered election contexts in which it is possible to measure the intraparty cohesiveness by drawing on VAA data (Schwarz, Schädel, & Ladner, 2010).

So far, VAA data are underexploited when it comes to the analyses of voter positions. This is mostly due to the unresolved issues of nonrepresentativeness and self-selection into the sample. However, the quality of the data already would allow for comparative cross-sectional studies between countries and within countries over time.

Drawing on the positions on identical policy issues of parties as well as of citizens also provides the chance to study the quality of the relationship between parties and citizens in terms of democratic policy representation, within as well as beyond national borders. A few studies use the distribution of voters on the statements to compare the location of a party and its voters in the political space (Wheatley, 2012). Any difference could indicate either a problem concerning the selection of parties or a misperception of the voters concerning the “real” position of their party. The rise of supranational VAAs, in particular, provides citizens with the possibility to compare their policy views not only with national parties, but also with parties competing outside their own country. On the basis of EU Profiler generated data, Bright, Garzia, Lacey, and Trechsel (2016) tackled the debate of transnationalization of EU elections by providing evidence that a majority of European voters would find a better match (i.e., a lower “representative deficit”) with a political party from a European country other than their own. Mendez (2017) used VAA-generated data to revisit the long-running debate about directional and proximity models of vote choice, and Katsanidou and Otjes (2016) resorted to VAA-generated data to understand the restructuring of national political spaces.

Conclusions

Research on Voting Advice Applications (VAAs) is a thriving subfield of political science with a lot of potential for related fields of research such as electoral studies, party research, representation, and public opinion. Still, the overall potential of VAA data has not been fully exploited. This potential and the need for more studies can be grouped along the distinction between the “core” of VAA research (concerning the making and role of VAAs) and VAA research in a broader perspective (regarding the usage of VAA data for other fields of research).

Core VAA Research—Open Questions

Some riddles persist in regard to the role of VAAs in modern democracies. For example, it is unclear why VAAs encounter a very strong demand in some countries but not in others. What are the relevant contextual factors? And how do these factors interact with each other? These questions are still open for research.

When it comes to understanding VAA effects, there is a relatively large body of knowledge supporting the idea that VAAs foster electoral participation. Yet, research still struggles with the underlying complex mechanisms behind the impact of VAAs on party/candidate choice. Numerous factors, such as preexisting party preferences, the concretely indicated VAA result, the election context, and the party supply, and their interaction with individual-level patterns of electoral participation must be integrated into a polygonal explanatory model that could explain under which conditions using a VAA does make a difference for concrete electoral choices.

Regarding VAA design, the question of gold standards for identifying the party positions as well as for the algorithms that calculate the distance between users and parties is still open for discussion. The implications of different designs on usage, and accordingly on effects, have been addressed, but the implications of this research have not been fully taken into account by VAA providers who seem to value continuity more than empirical rigor. This also applies for ethical issues that have been neglected by makers and researchers of the tool so far, such as questions concerning data protection and manipulation by hacking.

Out of such a normative perspective and considering most recent developments in established democracies, research could pay attention to the question of whether VAAs contribute to a rationalization of political discourse, the depersonalization of politics, and the strengthening of the responsiveness and responsibility of political parties in office. By the very nature of issue-based applications, VAAs have the potential to “prime” issues at the expense of personality evaluations in the individual voting calculus. If VAAs follow certain criteria, they have the potential to inform voters about the “real” intentions of political parties and to unmask populism by urging these parties to position themselves on nonpopulist issues.

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By priming issues, VAAs could also tackle the representative deficit in some democracies in terms of fostering the relationship between voters and parties. One way is to conceptualize the VAA proposals as promises that implementation after the election could also be registered by modified applications, which would support the delegate model of political representation and serve the increasing number of “issue voters” with weaker party ties (Ladner, 2016).

VAA Research in a Broader Perspective—Open Questions

There is still work to be done in regard to the broader perspective of VAA research and the usage of the data for other research interests. Given the number of VAAs that have been implemented, a wealth of data awaits further analyses. However, the existing data has to be cleaned and harmonized; indeed, it would be even better to find an agreement on the instruments used to measure relevant constructs before data are collected.

Concerning party positioning, the ECPR VAA Research Network has started to collect data on the positions of parties in about 60 VAAs in different countries and at different points in time. This data collection could provide a starting point for a database that could bear several advantages over other data on party positions such as the Chapel Hill Expert Survey and Comparative Manifesto Project (Garzia et al., 2017).

Conclusions drawn from VAA data on the entire electorate or population face the problem of the self-selection of VAA “samples.” To overcome this challenge, researchers have to develop methods and standards of data cleaning and ex-post stratification—possibly by joining forces with survey researchers. The representativeness of the data would open the opportunity to use VAA data for the predictive purposes, such as foreseeing the outcomes of the elections for which VAAs have been prepared.

Following this line of research, there is a need for new methodological approaches to analysing the wealth of VAA data. Strategies include machine learning techniques and other ways to handle the enormous amount of VAA-generated data. In a broader perspective, VAAs certainly have a high potential when it comes to interdisciplinary projects that go beyond the borders of political and social science. Computer scientists are already deeply involved in VAA projects, in that the technical side of these tools lies in their domain. Likewise, other disciplines such as psychology or cultural sciences could profit from scrutinizing this timely and burgeoning phenomenon.

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Appendix

Country	Voting Advice Application
Australia	Vote Compass, YourVote
Austria	Politikkabine, Wahlkabine
Belgium	Doe de Stemtest!, WeCitizens
Bulgaria	Glasovoditel
Canada	ISideWith, Vote Compass
Chile	ISideWith
Czech Republic	Volební kalkulacka 2016, Volební rádce
Denmark	EU-Guide, ISideWith, Kandidat-Testen, Kend din Kandidat, Kend din Kandidat 2015, Valgkompasset

Voting Advice Applications

Estonia	Parlamendikompass
European Union	EU and I, EU vox 2014, EU Profiler, Votematch 2009, Votematch 2014
Finland	Helsingin Sanomat, ISideWith, Vaalikone
France	La Boussole Présidentielle 2017, ISideWith, Je vote qui en 2012, Politest, Pour qui voter?, Quiz, Qui voter, Vote Compass, Vote & Vous
Germany	Bundeswahlkompass, ISideWith, ParteieNavi, WahlNavi, Wahl-O-Mat, WahlSwiper
Great Britain	GE2017, ISideWith, PositionDial, Swap My Vote, The Economist's 2015 Election Quiz, Vote for policies, Who Can I Vote For?, Who gets my Vote UK, Who shall I vote for?, YourDemocracy
Greece	Help Me Vote/VoteMatch GR
Hungary	Vokskabin, Voters' Compass
Iceland	Help me vote
Ireland	ISideWith, Smartvote.ie, WhichCandidate
Israel	float 2013, ISideWith
Italy	ISideWith, Voi Siete Qui
Japan	Asahi Votematch, ISideWith, Mainichi Votematch, Vote Matching
Korea	ISideWith
Latvia	Pielaiko partiju!
Lithuania	Mano Balsas
Mexico	ISideWith
The Netherlands	ISideWith, Jongeren Kieswijzer, Kieskompas, Ondernemersstem, Stemmentracker, StemWijzer
New Zealand	ISideWith, On the fence, Vote Compass

Voting Advice Applications

Norway	NRK Valgomat 2015, Partitesten
Poland	ISideWith, Latarnik Wyborczy
Portugal	ISideWith
Romania	TestVot, Votul meu
Slovenia	Volilna anketa
Slovakia	KohoVolit SK
Spain	elecciones, ISideWith
Sweden	ISideWith
Switzerland	Einfach Wählen, ISideWith, Smartvote
Turkey	Oy Danismani, Oy Pusulasi
United States	Vote Compass, Votesmart, Candidate Match Game 2016, Candidate Match Maker 2016, ISideWith, Match Your Vote, VoteMatch Quiz, 2016 Presidential Election Candidate Quiz, Societly, The 2016 Political Party Quiz, Voter Guide, Who Should You Vote For?

Notes:

(1.) One backbone of the flourishing research is the VAA Research Network of the European Consortium for Political Research (ECPR), which was founded in 2015 and encompasses more than 100 scholars dedicated to the research on Voting Advice Applications.

(2.) See the site “VAA data”.

(3.) The Research Network on Voting Advice Applications has agreed on standards and minimal requirements that should be respected by makers of VAAs. See The Lausanne Declaration.

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