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How Voting Advice Applications Affect Turnout in European Parliamentary elections and national parliamentary elections

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How Voting Advice Applications Affect Turnout in European Parliamentary elections and national parliamentary elections

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Sammanfattning

Valkompasser har blivit ett vanligt inslag i de flesta valkampanjer i Europa. Forskning har visat att valkompasser kan påverka väljarna på flera olika sätt. Även om flera studier har funnit stöd för valkompassers positiva inverkan på valdeltagandet har de flesta enbart studerat en typ av val åt gången och mestadels fokuserat på nationella parlamentsval. Dessutom verkar graden av påverkan variera. Med tanke på resultatens breda spännvidd och det övervägande fokuset på nationella parlamentsval är det viktigt att undersöka valkompassers inverkan på valdeltagandet vid olika typer av val, i samma övergripande valsystem. Till exempel vet vi att väljare i samma land tenderar att bete sig annorlunda i nationella parlamentsval jämfört med Europaparlamentsval, där nivån av intresse, kunskap och valdeltagande ofta är lägre. Därför undersöker denna studie huruvida valkompasser påverkade valdeltagandet i riksdagsvalet 2018 och Europaparlamentsvalet 2019 i Sverige. Detta görs med hjälp av nationellt representativa och röstlängdsvaliderade registerdata från Valforskningsprogrammet. De övergripande resultaten visar att valkompasser påverkade valdeltagandet i båda valen, men mer så under Europaparlamentsvalet 2019.

Summary

Voting Advice Applications (VAAs) have become a common feature of most election campaigns in Europe. Research has shown that VAAs can affect the electorate in numerous ways. Although several studies have found support for VAAs' positive impact on turnout, most have only studied one type of election at a time and have mostly focused on national parliamentary elections. Moreover, the level of impact seems to vary. Considering the wide range of the results and the predominant focus on national parliamentary elections, I argue that it is important to investigate the level of impact of VAAs on turnout at different types of elections, in the same overall electoral system. For example, we know that voters in the same country tend to behave differently in national parliamentary elections compared to European Parliament elections, where the level of interest, knowledge, and turnout is often lower. Hence, this study compares the impact of VAAs on turnout in the national parliamentary elections 2018 and the European Parliament elections 2019 in Sweden, using data from the Swedish National Election Studies and turnout validated against the official vote records. The overall findings show that VAAs did affect turnout in both elections, but more so during the European Parliament election 2019.

Introduction

Numerous tools, measures, and campaign efforts can be used when trying to promote electoral participation in elections. One example is Voting Advice Applications (abbreviated VAAs) that are "web-based tools designed to help voters to find a political party that matches their political views" (Fischer et.al. 2017:279). VAAs have become increasingly popular in the last two decades, especially in Europe where VAAs were first introduced (Gemenis et.al. 2014:281).

VAAs produce easily accessible and understandable information regarding the most salient political issues and are said to lower the time and effort of getting politically involved. When the time and effort required to get politically informed is low; the likelihood of voting is higher. Henceforth, there are reasons to believe that VAAs have the potential to influence different electoral aspects such as turnout (Wall et.al. 2014:418).

Scholars have become increasingly interested in VAAs during the years but still after fifteen years of research, there is no consensus regarding the impact of VAAs on turnout (Gemenis 2024:2). As shown in a meta-analysis by Munzert and Ramirez-Ruiz (2021:699), most previous studies find that VAAs have a positive impact on turnout but for a few exceptions. However, concerns have been raised regarding the validity of the positive results in some studies. Scholars argue that the positive results might have been inflated due to methodological issues such as self-selection bias when using data from the VAA users (Munzert and Ramirez-Ruiz 2021:702).

Most studies about VAAs in Europe investigate the impact and usage of VAAs in a national context and focus on national elections (e.g. Wall et.al. 2018; Kleinnijenhuiset.al. 2017; Benesch et.al 2023; Germann and Gemenis 2019; Liao et. al. 2020). Nonetheless, not many studies about VAAs have been made that investigate other types of elections such as European Parliament (EP) elections (Dinas 2014). Even fewer studies can be found that compare the usage and impact of VAAs between different kinds of elections.

It is widely known in election research that voters behave differently depending on the electoral context. For example, EP elections are characterized by lower levels of interest and low turnout compared with national parliamentary elections (Reif & Schmitt 1980; Clark 2014). Lefevere and Aelst (2014:160), as well as Marquart et.al. (2020:2-4), argue that the mobilizing potential of campaign efforts often has a larger impact during EP elections compared to national parliamentary elections since voters have less knowledge and information from the outset. Hence, it is interesting to investigate whether VAAs also have a larger influence on turnout in EP elections than in national parliamentary elections. In a rare study comparing VAAs in different elections, Van de Pol et.al. (2019) argue that the *usage* of VAAs differs between national parliamentary elections and EP elections, although they did not analyze the effect on turnout.

This report thus aims to increase our knowledge on VAAs, by investigating if the influence of VAAs on electoral turnout differs between different types of elections. This paper focus on the national parliamentary election in Sweden 2018 and the EP election 2019 in Sweden.

Sweden is an interesting case for several reasons. First, the usage of VAAs in Sweden has increased massively during the years. In a survey made by the Swedish National Election Studies (SNES) in connection with the national parliamentary election 2022, 63 per cent of the respondents reported that they had used a VAA. Also, more and more of the VAA users in Sweden express that they were influenced by VAAs when choosing which party to vote for (Oscarsson et. al 2024:271). Secondly, there are large differences in turnout to Swedish parliamentary elections compared to the EP elections. In the EP election 2019, the turnout rate was 32 percentage points lower than in the Swedish parliamentary election 2018; one of the largest differences in turnout in the EU (European Parliament 2019:34). The turnout gap was similar during the Swedish parliamentary election 2022 and the EP election 2024 (European Parliament 2024).

Thirdly, the elections occurred close in time (Swedish parliamentary election in September 2018 and EP election in May 2019). Finally, SNES offer high-quality data for these analyses and use validated register data for turnout among the survey respondents. This will, in turn, counteract the methodological issues prevalent in some VAA studies using survey data.

In 2020, I did a similar study (Evertsson 2020) but I was then not able to use data on turnout validated against the official vote records for both elections. Hence, this report will evaluate the previous study and present more precise and updated results. The aim is to compare the potential influence of VAAs in two different kinds of elections.

Voting Advice Applications (VAAs) and electoral behaviour

Since the introduction of VAAs in the Netherlands in 1989, VAAs have become increasingly popular and are used by millions of voters. VAAs are an interactive online tool which present the best party match based on the VAA users' answers to issue statements (Gemenis 2024:2). Most VAAs are produced and published by newspapers, often with assistance from scientists and knowledgeable persons in politics (Germann and Gemenis 2019:151). During the years, VAAs have become more advanced and continues to be developed with for example usage of AI and chatbots in the VAAs (Kamoen, McCartan and Liebrecht 2022:161; Gemenis 2024:1).

In Europe, VAAs are used by between 13-35 per cent of the electorate (Krouwel et.al. 2012:4). The share is even higher at 40 per cent of the voters in the Netherlands where VAAs originate (van de Pol 2019:226) and the two largest VAAs in the Netherlands were consulted more than 10 million times before the Dutch Parliamentary Elections 2021 (Kamoen, McCartan and Liebrecht 2022:161). VAAs are also employed in other parts of the world but usage is not as widespread (Wessel Tomborg and Albertsen 2023:583). How widely spread usage of VAAs is in a country may depend on how long VAAs have been prevalent in countries (Marschall 2014:97) and the party system. More fragmented multiparty systems make it harder for voters to decide which party to vote for and therefore, the proportion of VAA users may be larger (Kamoen, McCartan and Liebrecht 2022: 160-161; Krouwel et.al. 2012:4; Wall et.al. 2014:418). VAA users tend to be younger, male, highly educated, and politically interested (Marshall 2014:98-101; SNES 2024:270-1).

Van de Pol et.al. (2014:403-4) divide VAA users into three different categories; (1) *checkers* who are users that are already interested in politics and know which party to vote for and uses VAAs for entertainment and to check whether VAAs produce their favorite party; (2) *seekers* who are using VAAs as a tool to decide which party to vote for and to get politically informed, as they are somewhat politically interested; and (3) *doubters* who are the least politically interested and do not have clear preferences regarding party choice.

Comparing first-order and second-order elections, Van de Pol et.al. (2019) found that *checkers* accounted for 58 per cent of the users in the Dutch parliamentary election 2012, whilst only 48 per cent in the EP election 2014. Contrastingly, the proportion of *seekers* was higher in the EP election (41 per cent) compared to 32 per cent in the national election. The proportion of *doubters* was about the same in both elections (10-11 per cent). Since the amount of seekers was higher in the second-order election, this also implies that these users actively use VAAs to learn and be active in the election campaign, which "suggests that VAAs' mobilizing capacity is larger in second-order elections" (Van de Pohl 2018:235).

It takes a lot of time and effort to get politically involved and Wessel Tromborg and Albertsen (2023:582) describes it as a *Herculian task* to have information about all electoral options. *Rational choice theory* is often used when evaluating the impact of VAAs and according to that theory, humans are rational and only interested in learning about things that interest them. In other words, if a voter is not interested in politics and elections, the probability of voting is low. However, when the cost of getting politically

informed is low; the likelihood of voting is higher. Since VAAs decrease the time and effort of getting politically involved, VAAs "should lead to an increased likelihood of political participation" (Maheo 2017:515) and make voters more motivated when becoming more aware of the party differences (Gemenis et.al. 2014:282).

Nevertheless, scholars disagree about the electoral impact of VAAs. When it comes to the impact on turnout, results vary between scholars using different cases and methodologies. Munzert and Ramirez-Ruiz (2021:699-700) state in their meta-analysis of VAAs that the study design affects a lot when measuring the effects of VAAs. Observational studies often find positive results whereas experiments do not (Enyedi 2016:1013).

Except for a few exceptions (for example Enyedi 2016:1010; Benesch et. al 2023:692), most studies find evidence that VAAs affect turnout positively. Germann and Gemenis (2019:165) found that usage of one of the VAAs in Switzerland during the federal election 2007 were responsible for 1,2 percentage points of the total turnout. Gemenis et.al. (2014:282) found that VAA users were 4,2 times more likely to vote compared to non-users during the 2006 Dutch parliamentary election, and if no VAA would have been present, turnout would decrease with 4,4 per cent. This result is similar to the findings by other scholars such as Garzia et.al. (2014:106). Dinas et.al. (2014:297) found even higher numbers, that VAA users were 14 percentage points more likely to vote than non-VAA users during the EP election 2009. Furthermore, Garzia et.al. (2014:110) found that the effect of VAAs differed between different countries. While VAA users were 2 per cent more likely to vote in Germany, Finland and the Netherlands compared to non-VAA users, VAA users were 10 per cent more likely to vote in Switzerland. Most studies on the effect of VAAs on turnout have not compared the effect of VAAs on different types of elections.

The influence of VAAs may also vary between groups. Young voters with low education, low political interest, without any strong party identification, seem to be affected more by VAAs than other voters. These are also groups known to have a lower turnout than others do in elections (Gemenis et.al. 2014:286).

Elections and voting behaviour

Oscarsson and Holmberg (2016:49) make a difference between *individual explanations*, *contextual explanations* and *institutional explanations* when explaining electoral turnout. The most common focus in explaining electoral participation derives from *individual explanations* (Oscarsson and Holmberg 2016:50). This is partly because it is relatively easy and uncomplicated to study individual explanations (Verba et.al 1995:270) and the strength in explaining electoral turnout through individual explanations has been proven in numerous studies. One common category of explanations concerns *resources* such as education, age, occupation, class and income, as well as the level of social integration such as position on the labor market, citizenship, country of origin, the size of one person's network and marital status. Studies have shown that people with higher education, higher income and more advanced jobs vote to a higher degree than people with no or low education, low income and people with less advanced or no jobs. Older people, married and people with large social networks also tend to vote more frequently than younger persons, people living alone and people with small networks (Oscarsson and Holmberg 2016:52).

Another group of individual explanations focus on *motivations*, i.e. what psychologically influences people to vote. Politically interested persons and strong party identifiers tend to vote more frequently than others do. People with extremist party preferences have a higher tendency to vote compared with people that vote for centrist parties (ibid.:53-5). Another motivation can be a feeling of civic duty, or that it is exciting to be part of politics and enjoy the company of other politically active citizens (Verba et.al. 1995:109-110).

Contextual explanations also matter. The *social context* explains how family, the neighborhood and the workplace can influence a person's voting behaviour. Turnout is generally higher in surroundings that have a high tendency to vote and vice versa. In addition, the digital context can matter. Haenschen (2016:556) found that Facebook posts, urging voters to vote, led to more people voting during the 2014 general election in Texas, USA.

Moreover, turnout is higher in elections that are perceived as exciting and important. The *political context* differs between elections and people are more motivated to vote if the election shows large differences between the parties and high ideological polarization (Oscarsson and Holmberg 2016:58-60). When there is a lot at stake during an election such as a potential change of government, the media put in more effort into the election and parties make a larger effort to mobilize voters. This is a central aspect of the second-order election theory (Reif & Schmitt 1980), where higher turnout in national parliamentary elections is expected, as they are seen as more important and exciting than for example local elections or the EP elections.

How and when the election is structured are *institutional explanations* that have implications for an election's outcome. For example, voters are more willing to vote if the election is held during late spring or early autumn and on weekends (Oscarsson & Holmberg 2016:61). Countries also have different minimum age of voting, voters might be obliged to register before voting or have compulsory voting. Oscarsson and Holmberg (2016:62) argue that there is an interplay between individual's motivation and the institutional setting, indicating that if the thresholds for voting are low, more people tend to vote.

Different elections; different voting behaviour

Turnout is lower in EP elections compared to the national elections in the EU Member States (Viola 2015:3) and the turnout gap is particularly large in some countries such as Hungary, Poland, Slovakia and Sweden (European Parliament 2024:40). Scholars have developed different explanations for this difference in voting behaviour and two evident strands exist, namely the *second-order election theory* and *alternative explanations* (Hobolt & de Vries 2016).

Reif and Schmitt (1980) made a distinction between first-order elections, such as elections to the national parliament, and second-order elections, such as elections to the EP and local elections. The main element in this theory is that the voting behaviour differs between first- and second-order elections because voters, parties and the media simply do not perceive second-order elections as interesting nor as important as first-order elections. Lower turnout in EP elections can thus be attributed to the fact that voters perceive that it is "less at stake" in second-order elections as the elections do not lead to government formation. Furthermore, the EP has been considered by some actors as a weak institution in EU politics; meaning that some voters do not perceive it worthwhile to vote (Marsh & Mikhaylov 2010:8). Viola (2015:41) also argues that a mobilization deficit exists during EP elections since neither parties nor the media spend lots of attention on EP elections and campaigns. Lefevere and Aelst (2014:161) argue that the political parties and media "are not expected to invest in second-order campaigns because the benefits of higher turnout are smaller and obtaining more votes does not yield equal returns" (ibid).

Moreover, voters are not expected to consider issues connected to the EU when voting in the EP elections, but rather vote on national, domestic issues according to the second-order elections theory. Clark and Rohrschneider (2009:646) refer to this as the *transfer hypothesis*. Another reason might also be that some voters have low knowledge about the EU or feel that the EU is too distant. EP elections are thus expected to function as mid-term polls rather than separate elections (Hobolt & de Vries 2009:424) and voters might use the EP elections to show dissatisfaction with the work of the government. This is also the theoretical explanation as to why larger and government parties are expected

to perform worse in EP elections compared to national elections (Marsh & Mikhaylov 2010:12). The timing of EP elections in relation to national parliamentary elections' electoral cycles is also expected to matter. The support for government parties is expected to be higher closer to national elections (Schmitt & Teperglou 2015:296-297).

Even though expectations from the second-order election theory have proven to be accurate in several studies, other explanations to differences in voting behaviour in national and EP elections have been lifted (Hobolt & Wittrock 2011:31). A lot has changed since Reif and Schmitt (1980) wrote their study about EP elections as second-order elections in the 1980s. Since then, European integration has both widened and deepened with more policy areas managed by the EU and people are more and more affected by the EU in their everyday lives (Clark & Rohrschneider 2009:646-7). Alternative explanations have in common their belief that, at least some voters, do care about the EP elections and base their voting intentions not only on national concerns but consider EU issues (Carubba & Timpone 2005; Clark & Rohrschneider 2009; Hobolt 2015; Hong 2015; Marsh & Mikhaylov 2010; Treib 2005).

Proponents of alternative explanations argue that the amount of consideration about EU issues voters have when voting in EP elections is dependent on individual-level factors and aspects in the campaign structure. Hobolt and Wittrock (2011:39) state that many voters initially based their vote on national issues, as highlighted in the second-order election theory, but that as voters become more informed about the EU and EP elections, voters tend to consider EU issues more. Hobolt and Spoon (2012:701) further argue that the level of politicization in the domestic debate about the EU affects whether voters consider domestic and/or EU matters and decide to vote or not. Furthermore, Clark (2014:342-3) state that the decision to abstain to vote EP elections is not because of a lack of interest in EU matters but is rather dependent on the voter's doubts about whether the EP can influence EU decision-making and if the EP represents the views and opinions held by the citizens.

Hypotheses

The first hypothesis deal with the influence that VAAs can have on voting in general. Since the expectation is that VAAs can reduce the cost of getting politically involved (Maheo 2017:515), and since finding a party that matches their viewpoint might lead voters to feel more motivated to vote (Gemenis et.al. 2014:282), VAAs should have the potential to increase the likelihood of political participation. Hence, the expectations are that:

> H_{1a}: *The probability of voting in the Swedish parliamentary election 2018 increases if a voter uses VAAs*

> H_{1b}: *The probability of voting in the European Parliament election 2019 increases if a voter uses VAAs*

Voters behave differently in national parliamentary elections and EP elections; especially turnout tends to be lower in the latter. The threshold for getting politically involved in EP elections is higher. However, if the time and effort for getting politically involved are reduced by using VAAs, they in turn may have an even larger mobilizing power in these types of elections than in first-order elections. Lefevere and Aelst (2014:160) argue that the mobilizing effects of measures to promote higher turnout should be higher during second-order elections compared to first-order campaigns because "these campaign effects occur in an information-sparse context" (ibid.)

Van de Pol et.al. (2019:241) also claims that people use VAAs for different purposes in first- and second-order elections. Since more users use VAAs for the specific purpose of getting better politically informed and choose which party to vote for during second-order elections, this "suggests that VAAs' mobilizing capacity is larger in second-order

elections" (Van de Pohl 2018:235). Consequently, it is reasonable to formulate the second hypothesis as followed:

> *H₂: The probability of voting in both the Swedish parliamentary election 2018 and the European Parliament election 2019 increases if a voter uses a VAA, but the difference concerning electoral turnout between VAA users and non-VAA users is larger in the European Parliament election 2019 than in the Swedish parliamentary election 2018.*

Data and variables

The data comes from the Swedish National Election Studies Programme (SNES): the Swedish parliamentary election study 2018, and the European Parliament election study 2019. A description of the material can be found in **Appendix A**.

One unique aspect of SNES data is that in addition to the data from the surveys, the data sets from SNES also include register data. No other election survey in the world includes this type of material. The register data comes from Statistics Sweden (SCB) that holds information about Swedish citizens such as income, electoral turnout, marital status, country of birth, job, etc. The usage of register data ensures the correctness of the data material and enables researchers to bypass misinformation provided by respondents.

There are negative aspects to using different surveys, since the respondents, the number of respondents, the questions and the timing is different, meaning that results derived from the surveys cannot be directly compared. However, this paper aims to investigate larger trends rather than individual aspects and not precise measures.

The dependent variable is captured by using the question *"Did you vote in the parliamentary elections this year?"* for the Swedish parliamentary election 2018 and the question *"Did you vote in this year's European Parliament election?"* for the EP election 2019. Both these questions have been corrected by using register data, as there is a high tendency of respondents responding to the question wrongfully, either intentionally or unintentionally (Holbrook and Krosnick 2010:328). By controlling the data with register data, we bypass this problem. Among the respondents in the Swedish parliamentary election 2018, 97,54 per cent voted (SNES 2018), compared to the turnout of 87,2 per cent (Valmyndigheten 2020a). In the EP election 2019, 79,65 per cent of the respondents voted (SNES 2019), compared to the turnout of 55,3 per cent (Valmyndigheten 2020b). It is known that politically interested persons with a generally higher likelihood of voting are also the persons that have a higher tendency to answer surveys, hence the higher likelihood of overrepresentation (Voogt & Saris 2003:165).

The key independent variable is captured by using the question *"Ahead of this year's election, did you do any of the party tests/Voting Advice Applications that different media had on their websites, where you could test which party you thought was closest?"* for the Swedish parliamentary election 2019 and the question *"Ahead of this year's election to the European Parliament, did you: Do a party test/Voting Advice Application that different media had on their websites?"* for the EP election 2019. Even though both questions in the two surveys ask for the same thing, the wording of the questions is slightly different. This aspect is important to take into consideration due to response bias since people may answer questions differently depending on how the question is worded (Weaver et.al 1997:24). It is also important to acknowledge the issue of order effect bias (Ahmad et.al 2014:206) since the questions were situated differently in each survey.

Figure 1   Distribution of the key independent variables, nominal scale
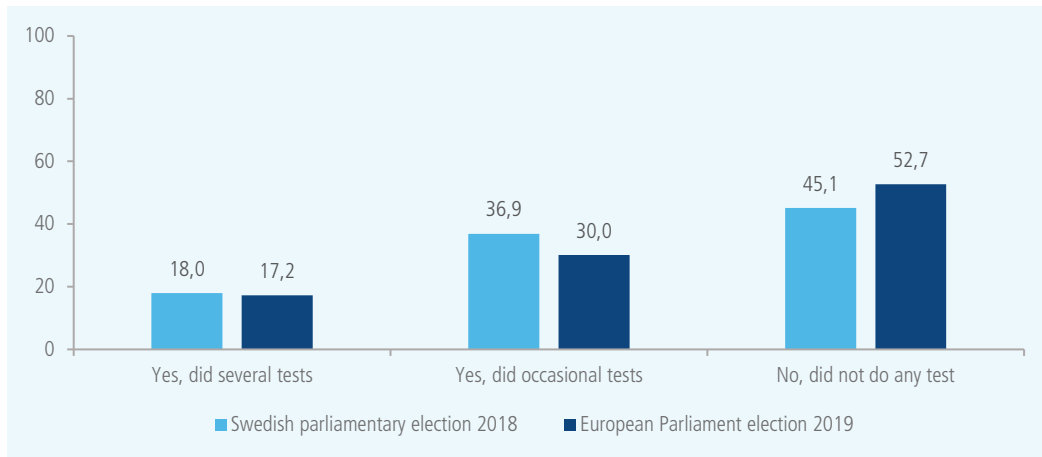
Source: SNES (2018) for the Swedish parliamentary election 2018 and SNES (2019b) for the EP election 2019

In the analyses, the response options *"Yes, did several tests"* and *"Yes, did occasional tests"* have been merged into one category since this paper aims to differ between VAA users and non-VAA users, and not differentiate between different types of VAA users as well.

The control variables have been categorized into groups of explanations: *Individual resources, Individual motivations* and *Contextual explanations*. The control variables are not only of interest for electoral turnout but also usage of VAAs. For example, Van de Pol (2019:228) argues that age, gender, education, political interest, and party affiliation affect whether someone turns to a VAA or not.

The *individual resource* variables are *Gender, Age, Education, Income, Marital status* and *Place of residence*. Albeit gender differences have decreased over time, it is important to control for *Gender* since women have proven to be more likely than men to vote in EP elections in the past (Berg & Oscarsson 2015). Previous studies have also shown that age affects electoral turnout. The probability of voting is lower among young people but increases with age until persons get older and the probability of voting decreases again. This means that *Age* and *Electoral turnout* often show a curvilinear relationship and therefore, *Age squared* is also included (Bhatti et.al. 2012). *Education* and *Income* are included in the analysis persons with high education and high income are more likely to vote compared to people with lower education and income. When it comes to *Marital status*, people that live together with someone have a higher tendency to vote than people living alone (Oscarsson & Holmberg 2016:51-2), and *Place of residence* since people living in cities are more likely to vote in the EP elections compared to people living in rural areas (Oscarsson & Holmberg 2010:47).

The *motivational* control variables are *Political interest* and *Political affiliation* since turnout is higher among persons interested in politics and those who identify with a party. *Ideology* matters as extreme positions increase turnout. *Member in trade union/professional organisation* is included since members in trade union/professional organizations have higher tendencies to vote. Regarding *contextual explanations*, the variables regarding how the elections are perceived are important. *Political effect, Clear party differences* and *Opinion about the election campaign* are included since if the election is perceived as exciting and interesting, if there are clear party differences and if the election campaign is not perceived as focusing too much on party bickering, the likelihood of voting is higher. If a voter is convinced to vote by someone in their

surroundings, this may also increase the likelihood of voting. An overview of all variables can be found in **Appendix B**.

Since the dependent variable *Electoral turnout* is dichotomous and measures whether a person voted or abstained in the Swedish parliamentary election 2018 and the EP election 2019, logistic regression modelling is used. For easier interpretation of the results in the logistic regression, not only the b-coefficients are presented but the predicted probabilities are calculated as well. The predicted probabilities compare different values of the independent variable with each other, and how these values relate to the dependent variable, while holding the remaining independent variables at their mean values. The predicted probabilities range between 0 and 1 and can be interpreted as percentage points (Williams 2012:308-312).

When considering alternative methods, the research question could also have been answered through a qualitative method by doing for example interviews that potentially would have deepened the understanding of the phenomena of interest. Nevertheless, the generalizability of the results might have been negatively affected by doing interviews due to a smaller sample. Also, since this paper investigates two elections that happened years ago, there is a possibility of memory failure if one would make interviews regarding electoral behaviour in 2018 and 2019.

The most expedient choice of method would be to make an experiment. Nonetheless, experiments are eminently time-consuming and require more time and resources than this paper can afford. Since this paper investigates two types of elections held at different points in time that were not occurring during the writing of this paper, the time aspect also makes it impossible to accomplish an experiment. Gemenis et.al. (2014:283) also highlights that some ethical aspects need to be considered before making an experiment regarding VAAs. Persons in the control group that are not using VAAs might be dis-advantaged in their electoral behaviour compared to persons using VAAs and it is difficult to ensure compliance with not using VAAs in the control group.

Results

This paper investigates whether the probability of voting in the Swedish parliamentary election 2018 and the European Parliament election 2019 increases if a voter uses VAAs, and whether the impact of VAAs differs between the elections. First, the two elections are analyzed separately with four different models, in **Appendix C** for the Swedish parliamentary election 2018 and **Appendix D** for the EP election 2019. Secondly, the results of the two elections have been merged in **Table 5**.

In **Appendix C** and **Appendix D**, Model 1 includes control variables inherent in *individual explanations – resource explanations* for electoral turnout, while in Model 2, variables inherent in *individual explanations – motivational explanations* are included. Control variables inherent in *contextual explanations* for electoral turnout are added in Model 3. The full model with all the control variables inherent in both *individual* and *contextual explanations* are presented in Model 4.

When analyzing the Swedish parliamentary election 2018 in **Appendix C**, it becomes evident that usage of VAAs and electoral turnout have a positive and statistically significant relationship in all four models. The predicted probability in the full model tells us that VAA users have 1 percentage point higher probability of voting compared to non-VAA users (98,6 per cent among non-VAA users and 99,6 per cent among VAA users).

Figure 2   Average Predicted Probability of voting in the Swedish parliamentary election 2018 among VAA users and non-VAA users
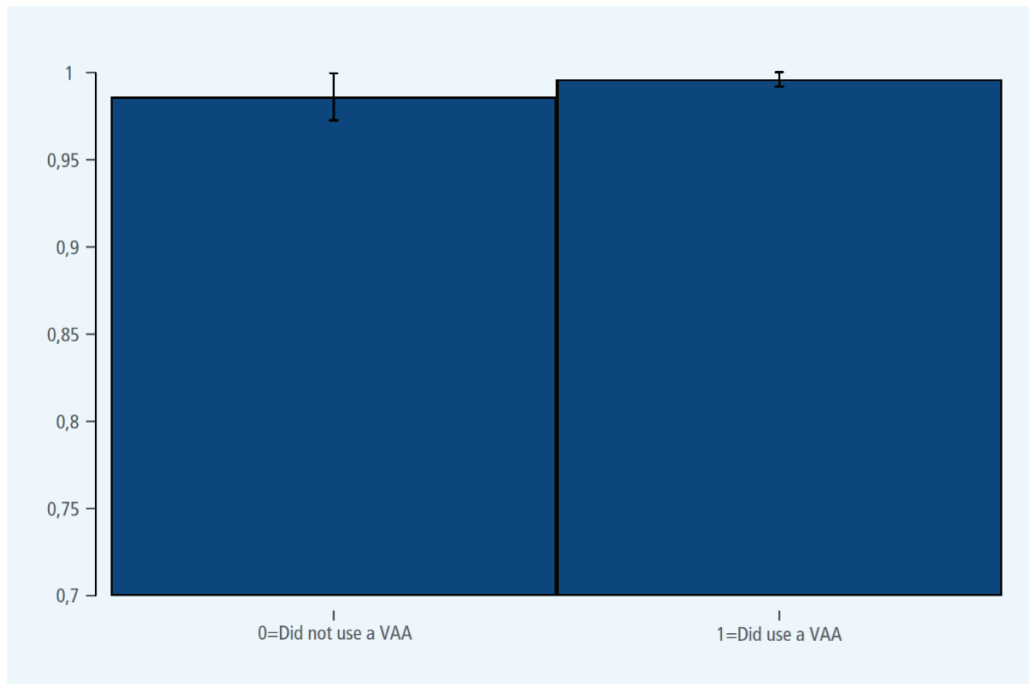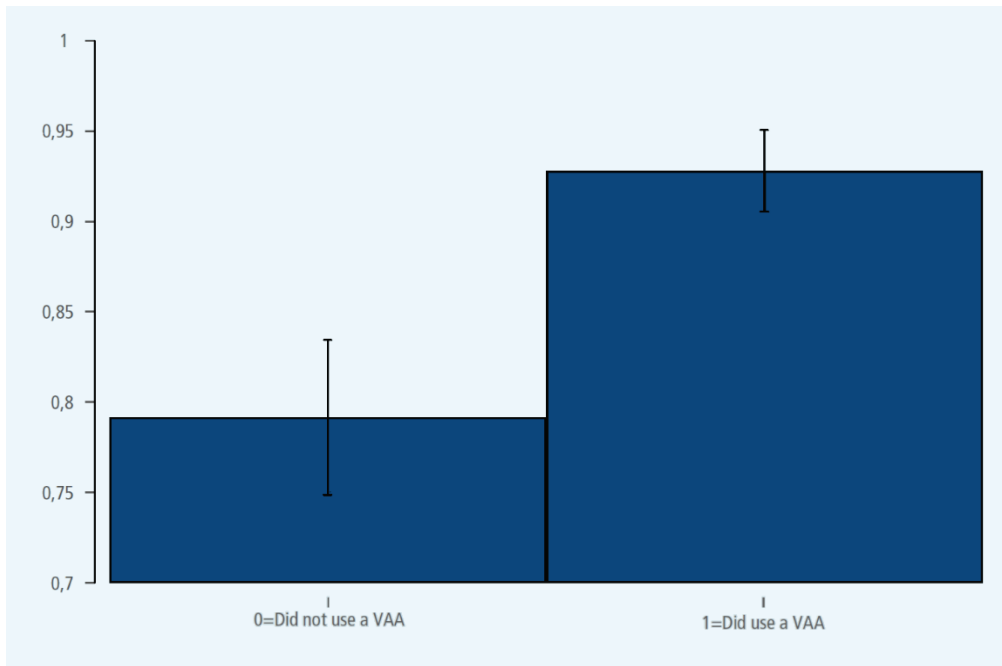

Source: SNES (2018) for the Swedish parliamentary election 2018 and SNES (2019b) for the EP election 2019

Among the control variables for in *individual explanations – resource explanations*, the statistical significance for *Age* increased in Model 4 compared with Model 1. *Age squared* and *Marital status* are stable at the same level of statistical significance in Model 1 and Model 4. The reasoning for including a squared variable for age is because previous research (e.g. Bhatti et.al. 2012) has found that the relationship between age and electoral turnout often shows a curvilinear relationship, i.e. younger persons have a lower likelihood of voting compared to middle-aged persons, but that the likelihood of voting again decreases when a person gets older. However, as shown in **Appendix E**, turnout increased the older a person gets among the survey respondents, albeit showing small differences.

When it comes to the control variables inherent in *individual explanations – motivational explanations*, only *Political affiliation* shows a statistically significant relationship in both Model 2 and Model 4. None of the variables inherent in *contextual explanations* are statistically significant in either Model 3 or Model 4. Most of the predicted probabilities for the variables with statistical significance in Model 4 do not show large deviation but have decreased with up to 0,6 percentage points compared to the previous models.

In **Appendix D** where the EP election 2019 is analyzed, the relationship between usage of VAAs and electoral turnout is positive and statistically significant at the highest level in all four models. VAA users have 13 percentage points higher probability of voting in the election compared to non-VAA users, as shown in the full model (81,4 per cent among non-VAA users and 94,2 per cent among VAA users).

Figure 3   Average Predicted Probability of voting in the European Parliament
               election 2019 among VAA users and non-VAA users

Source: SNES (2018) for the Swedish parliamentary election 2018 and SNES (2019b) for the EP election 2019

Among the *individual explanations - resource explanations*, the only statistically significant variables in Model 1 are *High education* and *Large city*. However, *High education* is no longer statistically significant in the full model. *Large city* is still statistically significant, but at a lower level, in the full model. When it comes to *individual explanations – motivational explanations*, the variable *Political interest* is statistically significant at the highest level in both Model 2 and Model 4. *Ideology* is also statistically significant, at the lowest level in Model 2 but a higher level in Model 4. All of the variables inherent in *contextual explanations* are statistically significant at the highest level in Model 3 and Model 4 except *Opinion about the election campaign* that is not statistically significant in any of the models.

Most of the predicted probabilities among the control variables with statistical significance in the full model show similar values compared to the previous models with differences of 0,2 percentage points. However, the predicted probability for *Political interest* has lowered from 11 percentage points in Model 2 to 6 percentage points in the full model, and *Convinced* has lowered from 13 percentage points in Model 3 to 0,9 percentage points in the full model.

Now when the results for the two elections have been presented separately, we are able to compare the results between the two elections.[1] We have been able to confirm both hypothesis H_{1a} and H_{1b} since VAA users showed a higher probability of voting in both the Swedish parliamentary election 2018 and the EP election 2019, but the question now is whether we can confirm hypothesis H_2. **Table 5** shows the full models for both elections.

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[1] Since the results derived from different surveys with different respondents, wording of questions and potential order effect bias, it is important to be slightly careful when directly comparing the results between the elections.

Table 5   Logistic regression of effects on the dependent variable *Electoral turnout* during the Swedish parliamentary election 2018 and the European Parliament election 2019

	Swedish parliamentary election 2018		European Parliament election 2019	
	Coef (S.E)	**ΔPP**	**Coef (S.E)**	**ΔPP**
VAA usage (ref=Not used a VAA)				
Used a VAA	1,32** (0,58)	*0,01*	1,30*** (0,23)	0,13
Gender (ref=female)				
Male	0,59 (0,52)	*0,003*	0,08 (0,23)	0,007
Age	-0,28** (0,14)	*0,00008*	0,01 (0,06)	0,003
Age squared	0,003** (0,006)		0,0003 (0,0006)	
Education (ref= Low education)				
Medium education	1,06 (0,98)	*0,004*	0,27 (0,46)	0,03
High education	1,07 (1,03)	*0,004*	0,76 (0,47)	0,08
Income (ref=Low income)				
Medium income	0,18 (0,67)	*-0,004*	-0,02 (0,31)	-0,007
High income	1,16 (0,73)	*0,002*	0,48 (0,30)	0,04
Marital status (ref=Single/Widow/Widower)				
Cohabitant/Married/Partnership	1,30*** (0,51)	*0,010*	0,13 (0,25)	0,01
Place of residence (ref=Rural area)				
Small town/village	-0,77 (0,76)	*-0,009*	0,10 (0,35)	0,009
Big town/City	0,31 (0,76)	*0,003*	-0,002 (0,31)	-0,0003
Large city	1,45 (1,22)	*0,007*	-0,75* (0,40)	*0,06*
Member in trade union/professional organization (ref=Not member)				
Member	0,04 (0,54)	*-0,0008*	0,20 (0,23)	0,02
Political interest (ref=Not interested)				
Interested	0,006 (0,54)	*0,0002*	0,65*** (0,23)	0,06
Party supporter (ref=Not party supporter)				
Party supporter	2,65** (1,09)	*0,011*	0,06 (0,24)	0,005
LR - Ideology (0-10)	0,09 (0,11)	*0,0006*	-0,09** (0,04)	-0,008
Campaign interesting (ref=Not interesting/exciting campaign)				
Indeed interesting/exciting campaign	-0,27 (0,53)	*-0,0014*	0,62** (0,28)	0,05
Clear party differences (ref=No clear party differences)				
Indeed clear party differences	-0,26 (0,52)	*-0,0014*	0,65*** (0,23)	0,06
Opinion about the election campaign (ref=Too much party bickering)				
Not too much party bickering	0,03 (0,68)	*0,001*	-0,06 (0,25)	-0,005
Convinced to vote (ref=Not convinced)				
Convinced	-0,25 (0,55)	*-0,006*	-0,82*** (0,24)	-0,09
Constant	*5,76* (3,17)*		*-1,25 (1,35)*	
Pseudo R^2	*0,2118*		*0,1774*	
N	*1,125*		*884*	

Note: Dependent variable *Electoral turnout* (1=voted, 0=not voted). Entries are coefficients, standard errors and predicted probabilities (Δ*PP*) from logistic regression computed using Stata. Standard errors in brackets. Number of observations hold constant due to missing values. ***, ** and * denote statistical significance at 1, 5 and 10 per cent, respectively.[2][3][4]
Source: SNES (2018) for the Swedish parliamentary election 2018 and SNES (2019b) for the EP election 2019.

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[2] Diagnostic tests showed no signs of multicollinearity between the variables and the Goodness-of-fit test showed that the model fits reasonably well.

[3] OLS regression of the full models for both elections were performed as a robustness check and showed no substantial disparities between the main relationship of interest, namely *Usage if VAAs* and *Electoral turnout*.

[4] As a second robustness check, I ran both of the full models for both elections with the variable *Usage of VAAs* excluded. The relationship between the dependent variable and the control variables did not change considerably.

As shown in **Table 5**, when comparing the predicted probability of voting in the elections among non-VAA users and VAA users, the difference in the Swedish parliamentary election 2018 was 1 percentage point, whereas, in the EP election 2019, the difference was 13 percentage points. This means that we can confirm hypothesis H_2.

Analysis

The importance of studying voting behavior in different electoral contexts can be attributed to the fact that voters behave differently depending on the election. Much focus has been on how voters behave during national parliamentary elections vis-à-vis EP elections and this paper contributes to this field. The EP elections have suffered from low turnout rates compared to national elections for decades and several attempts have been implemented to increase turnout (Hobolt & Spoon 2012).

This paper hypothesized that the probability of voting in the Swedish parliamentary election 2018 and the EP election 2019 increases if a voter uses VAAs (H_{1a} and H_{1b}). There are logical reasons for believing that VAAs have the potential to affect electoral outcomes. VAAs produce easily understandable information regarding the most important political issues and what stance the political parties have concerning these issues without much time and effort required from the users. In line with *rational choice theory*, people are only interested to put in time and effort into things that interest them. The probability of voting is dependent on how interested voters are in getting politically informed. According to Garzia et.al. (2014:105), voters are expected to take advantage of measures aimed at cutting the time and effort of getting politically involved. This is exactly what VAAs aim to do, i.e., to decrease the threshold of getting politically informed and involved during elections. If voters use VAAs, they may get more motivated to vote since they become better informed and realize that some parties represent similar political views as the voter.

The results found support for these assumptions. This paper found that VAA users had a higher probability of voting in the respective elections compared with non-VAA users. Consequently, the results confirmed the results from several studies (for example Germann and Geminis 2019; Gemenis et.al. 2014; Garzia et.al. 2014; Dinas 2014) and found support was found for both H_{1a} and H_{1b}. In the results of both elections, the relationship between the independent variable *Usage of VAAs* and the dependent variable *Electoral turnout* was statistically significant and positive.

The next dimension of this paper is to investigate whether the impact that VAAs serve on electoral turnout differs depending on the electoral contexts. Proponents of the *second-order election theory* and *alternative explanations* have found that the level of interest and turnout is often lower in second-order elections such as EP elections. Both theoretical strands posit disparate causes for this, but Lefevere and Aelst (2014:160) argue that the mobilizing effects of campaign efforts to promote higher turnout are higher during second-order elections compared to first-order elections because "these campaign effects occur in an information-sparse context" (ibid.). Consequently, voters may also be affected by VAAs differently depending on the election. Van de Pol et.al. (2019) have shown that people use VAAs for different purposes in first- and second-order elections. In both first- and second-order elections, most users use VAAs for entertainment purposes (so-called *checkers*). However, more users also use VAAs to get better informed and choose which party to vote for in second-order elections compared with first-order elections (so-called *seekers*). Since the share of *seekers* is higher in second-order elections, it is reasonable to believe that voters get more affected by VAAs in second-order elections. That the share of *seekers* is higher during second-order elections also "suggests that VAAs' mobilizing capacity is larger in second-order elections" (Van de Pohl 2018:235).

Therefore, the third hypothesis (H_2) suggested that the probability of voting increases if voters use VAAs in the Swedish parliamentary election 2018 and the EP election 2019, but that the difference concerning electoral turnout among VAA users and non-VAA

users was larger during the EP election 2019 than in the Swedish parliamentary election 2018. The results of this paper showed that the difference in electoral turnout among VAA users and non-VAA users was 1 percentage point during the Swedish parliamentary election 2018, whereas in the EP election 2019, the difference was 13 percentage points. Since the difference in percentage points is larger in the EP election than in the Swedish parliamentary election, a larger difference can be found among VAA users and non-VAA users in the EP election 2019. This implicates that we got support for H_2.

The results are in line with previous research by Lefevere and Aelst (2014:160) and Marquart (2020:2-4), namely that the mobilizing capacity of campaign efforts to increase turnout have a larger impact in second-order elections. The results also confirmed the suggestion by Van de Pohl (2018:235) that VAAs' potential to mobilize voters might be larger during second-order elections.

Proponents of the *second-order election theory* argue that the interest in EP elections is low because people simply do not care about the outcome and consequently, turnout rates are lower in EP elections. However, proponents of *alternative explanations* instead argue that people are increasingly considering the EP elections and EU politics. We know that the share of the electorate that uses VAAs was higher during the Swedish parliamentary election 2018 (55 per cent) compared to the EP election (49 per cent), but the size of the shares is not very different and only differ 6 percentage points. This may implicate that the interest of getting politically informed about EP elections and EU politics is increasing and that *alternative explanations* better theoretically explain the findings in this paper.

Concerning the findings in how the control variables relate to *Electoral turnout,* several differences can be distinguished. During the Swedish parliamentary election 2018, the variables with statistical significance all belonged to variables inherent in *individual explanations* for electoral. Concerning the EP election 2019, variables with statistical significance belonged to both *individual explanations* and *contextual explanations* for electoral turnout.

That *contextual explanations* have a better predictive power in the EP elections might be explained by the second-order nature of EP elections and that people are not as knowledgeable and interested in EP elections. In Swedish parliamentary elections, voting may be more imprinted in the electorate and many voters may perceive voting as a civic duty. Also, voters may be more loyal towards their favorite party in the Swedish parliamentary elections as *Political affiliation* was statistically significant during the Swedish parliamentary election 2018 but not in in the EP election 2019. In the EP elections, on the other hand, these feelings and perceptions may not be as strong since these elections have not been present in Swedish politics for as long time and EP elections do not lead to government formation. Instead, the support for *contextual explanations* in the EP election 2019 demonstrates that voters are more influenced by their surroundings.

Nevertheless, it is also important to acknowledge the shortcomings of the results found in this paper. These results may not be representative of the whole Swedish population since a certain type of voters responds to surveys more than others. Voogt & Saris (2003:165) have shown that politically interested persons with a generally higher likelihood of voting also tend to respond to surveys to a higher degree compared to politically uninterested persons. This effect is evident given that almost all of the respondents (97,5 per cent) voted in the election even after controlling the data and using turnout validated against the official vote records. Also, since the respondents got information about the survey before the elections, this may motivate voters to vote since the voters got an eye-opener about the elections. It is also indisputable that the results may be affected by social desirability bias as the respondents may portrait themselves as more politically interested and involved than they are.

Also, since the material used in this paper derives from two different surveys, each with different respondents, design, questionnaire and timing, the results in the two respective elections cannot be directly compared. For a more cautious interpretation of

the results, the results should therefore instead of precise measurements be understood as that usage of VAAs does impact electoral turnout in both first- and second-order elections, and that the impact of VAAs on electoral turnout is larger in second-order elections.

One final aspect to consider is the causal effect of usage of VAAs for voting or abstaining in elections. This paper hypothesizes that by using VAAs, voters get more probable of voting. However, the relationship may function in the opposite direction. Potentially, voters who already intend to vote may also be more likely to use VAAs. We know from previous research (Van de Pol et.al. 2019) that the largest share of users uses VAAs for entertainment purposes. However, we also know that many voters use VAAs as a tool to get politically informed and to decide about party choice; meaning that there are also strong reasons for believing that VAAs causally lead to more voters voting. Previous research and theoretical frameworks provide several arguments that VAAs can affect turnout positively such as arguments by the *rational choice theory*, and that people are more inclined to vote if the time and effort of getting politically informed gets lower by measures aimed at promoting turnout. Consequently, it is reasonable to believe that usage of VAAs affects electoral turnout.

Concluding discussion

The EP elections have been characterized by lack of interest and low turnout for decades compared to national parliamentary elections. This has been an important issue in EU politics as a lack of interest and low turnout generate legitimacy issues in the EU (Clark 2014:341-2). Several attempts have been implemented to change this trend. The EP election 2019 saw for the first time since the introduction of EP elections in 1979 increasing turnout rates (CERGU 2019) and turnout continued to increase during the EP elections 2024 (European Parliament 2024:41) which has several reasons. One reason might be that campaign efforts aiming to increase political awareness and promote turnout, as well as the media, has taken a larger role which potentially leads to higher turnout (Marquart et.al. 2020). This paper has investigated the specific mobilizing capacity of VAAs as a tool to promote turnout during EP elections and national elections.

Even though several studies have researched the impact of VAAs on turnout and found positive results (for example Germann and Gemenis 2019; Gemenis et.al. 2014; Garzia et.al. 2014, Dinas 2014), this paper fills the research gap concerning VAAs and turnout in several aspects. First, previous studies have not made comparative studies in that sense that they compare the impact of VAAs depending on the electoral context and have only investigated one election at a time and/or one type of election which problematize the generalizability of the results. Since voters behave differently in national elections and EP elections, it is also possible that VAAs affect turnout differently in these elections. Secondly, according to Munzert and Ramirez-Ruiz (2021:699-700), some positive results in previous studies might have been inflated due to methodological issues. This paper use validated register data for several variables and therefore bypass problems with for example memory failure, social desirability bias and writing errors in these variables. Thirdly, since the Swedish parliamentary election 2018 and the EP election in 2019 occurred only 7,5 months apart, this creates a favorable setting for comparing the elections.

To begin with, the results showed that usage of VAAs had a positive impact on electoral turnout in both elections of interest. Furthermore, the results showed that usage of VAAs had a much larger impact on turnout in the EP election 2019 (13 percentage points difference between non-VAA users and VAA users) compared with the Swedish parliamentary election 2018 (1 percentage point difference between non-VAA users and VAA users). Even though these results should be interpreted with slight caution as discussed in the previous chapter, it is still evident that the impact of VAAs was larger during the EP election 2019.

What are the theoretical implications for these results? Proponents of the *rational choice theory* argue that by getting politically informed without much effort, the probability of voting increases. Therefore, by using VAAs, voters get easily accessible and understandable information without much time and effort required and might therefore be more motivated to vote. The results in this paper have shown that usage of VAAs does have the potential to increase the probability of voting in not only one, but two elections. The finding that the difference between VAA users and non-VAA users is larger during the EP election 2019 than in the Swedish parliamentary election 2018 is in line with previous research by Lefevere and Aelst (2014) and Marquart et.al. (2020) who argues that campaign efforts aimed at promoting electoral turnout have a larger effect in EP elections. The results also confirmed the suggestion by Van de Pol (2019:235) that the mobilizing capacity of VAAs is larger during second-order elections such as the EP elections.

The interpretation of the results seems to lend more support to *alternative explanations* for voting behaviour in EP elections than the *second-order election theory*. Proponents of *alternative explanations* argue that albeit that the level of interest and electoral participation is lower in EP elections compared with national elections, the interest in EP elections is increasing. The finding that the share of the electorate using VAAs in the EP election 2019 and the Swedish parliamentary election 2018 did not differ very much (47 per cent and 55 per cent respectively) might confirm this assumption. That the usage is more widespread in the latter is not surprising given that also the official turnout rates are higher during Swedish parliamentary elections than in EP elections. What is more surprising is that almost half of the electorate used VAAs in the EP election 2019 while the turnout rates in EP elections are much lower. The reason for the relatively widespread usage of VAAs during the EP election 2019 might derive from the purposes of using VAAs. Since the amount of *seekers* is higher in EP elections than in national elections, this implicates that these users are more affected by VAAs and interested in learning about EP elections compared to users who use VAAs for entertainment (*checkers*).

However, it is still a fact that the level of interest and electoral participation is lower in EP elections compared with national elections. In national elections, voters are acquainted with voting and the elections are deeply rooted in the electoral system, meaning that voters display more robust voting behavior and might not be as influenced by mobilizing efforts and other measures. In the EP elections, this is not the case, and voters are more likely to get affected by mobilizing efforts aimed at promoting higher turnout (Lefevere & Aelst 2014; Marquart 2020).

The results found in this paper imply that VAAs have the potential to be real deal-breakers during elections and have the capacity to function as a tool to increase interest and electoral turnout, especially during EP elections. To increase interest and turnout in EP elections has been an important issue in EU politics for many years and the results in this paper imply that VAAs can function as a remedy for the low levels of interest and turnout. These findings have large implications for future development and understanding of VAAs. The results can potentially lead to the media, political actors, and academics to see the potential in VAAs and continue with further work to improve aspects surrounding VAAs and conduct further research.

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Appendix

Appendix A: Description of material

	Swedish parliamentary election 2018, "Election study 2018"	European Parliament election 2019, "European Parliament election study 2019"
Sample size	22,970	10,000
Net response rate	47,2 %	41,2 %
Field period	2nd of August-2nd of November 2018	27th of May-2nd of September 2019
Number of editions	6	2
Survey method	Mail or internet	Mail or internet
Age of respondents	18 (and eligible to vote) to 85	18 (and eligible to vote) to 84

Source: SNES (2020) for the Swedish parliamentary election 2018, and personal communication with Richard Svensson (2020-04-28) for the EP election 2019

Appendix B: Overview of all variables

		Swedish parliamentary election 2018					European Parliament election 2019				
Variable	**Scale**	**N**	**Mean**	**Std Dev**	**Min**	**Max**	**N**	**Mean**	**Std Dev**	**Min**	**Max**
Dependent variable											
Voted	0-1	2,520	0,98	0,15	0	1	1,907	0,80	0,40	0	1
Key independent variable											
VAA use	0-1	2,696	0,55	0,50	0	1	2,054	0,83	0,38	0	1
Ind. resource variables:											
Male	0-1	3,267	0,51	0,50	0	1	1,911	0,49	0,50	0	1
Age	Contin.	3,267	53,66	17,36	18	84	1,911	53,91	16,91	18	81
Age squared	Contin.	3,267	3181	1788	324	7056	1,911	3192	1742	324	6561
Education	1-3	3,026	2,34	0,70	1	3	2,025	2,38	0,68	1	3
Income	1-3	1,886	2,08	0,86	1	3	1,391	2,16	0,87	1	3
Marital status	0-1	3,069	1,71	0,45	1	2	2,056	1,72	0,45	1	2
Place of residence	1-4	3,086	2,68	0,91	1	4	2,045	2,70	0,91	1	4
Ind. motivational variables:											
Political interest	0-1	3,227	1,67	0,47	1	2	2,078	1,65	0,48	1	4
Party supporter	0-1	2,777	1,32	0,47	1	2	1,883	1,34	0,48	1	2
L-R Ideology	1-10	3,076	2,10	0,89	1	10	1,977	5,31	2,57	1	10
Membership in trade union/professional organization	0-1	3,025	1,54	0,50	1	2	1,971	1,52	0,50	1	2
Contextual/ campaign variables:											
Campaign interesting	0-1	2,478	1,62	0,49	1	2	1,722	1,32	0,47	1	2
Clear party differences	0-1	2,483	1,47	0,50	1	2	1,695	1,46	0,50	1	2
Campaign bickering	0-1	2,487	1,18	0,37	1	2	1,718	1,24	0,43	1	2
Convinced to vote	0-1	2,694	1,17	0,38	1	2	2,062	1,19	0,40	1	2

Source: SNES (2018) for the Swedish parliamentary election 2018 and SNES (2019b) for the EP election 2019

Appendix C: Logistic regression of effects on the dependent variable *Electoral turnout* during the Swedish parliamentary election 2018

	Model 1		Model 2		Model 3		Model 4	
	Coef (S.E)	ΔPP	Coef (S.E)	ΔPP	Coef (S.E)	ΔPP	Coef (S.E)	ΔPP
VAA usage (ref=Not used VAAs)								
Used a VAA	1,14** (0,54)	0,014	1,18** (0,47)	0,015	1,09** (0,48)	0,019	1,32** (0,58)	0,010
Gender (ref=Female)								
Male	0,51 (0,50)	0,004					0,59 (0,52)	0,003
Age	-0,23* (0,13)	0,0002					-0,28** (0,14	0,00008
Age squared[5]	0,003** (0,001)						0,003** (0,006)	
Education (ref= Low education)								
Medium education	0,74 (0,91)	0,005					1,06 (0,98)	0,004
High education	0,77 (0,95)	0,005					1,07 (1,03)	0,004
Income (ref=Low income)								
Medium income	0,06 (0,63)	-0,007					0,18 (0,67)	-0,004
High income	1,05 (0,68)	0,003					1,16 (0,73)	0,002
Marital status (ref=Single/Widow/Widower)								
Cohabitant/Married/Partnership	1,29*** (0,49)	0,015					1,30*** (0,51)	0,010
Place of residence (ref=Rural area)								
Small town/village	-0,63 (0,73)	-0,011					-0,77 (0,76)	-0,009
Big town/City	0,23 (0,72)	0,004					0,31 (0,76)	0,003
Large city	1,33 (1,19)	0,010					1,45 (1,22)	0,007
Member in trade union/professional organization (ref=Not member)								
Member			0,14 (0,49)	-0,0006			0,04 (0,54)	-0,0008
Political interest (ref=Not interested)								
Interested			0,08 (0,47)	0,0009			0,006 (0,54)	0,0002
Political affiliation (ref=Not identify with a party)								
Identify with a party			2,33** (1,04)	0,018			2,65** (1,09)	0,011
Ideology			0,13 (0,10)	0,001			0,09 (0,11)	0,0006
Political effect (ref=Not interesting/exciting election)								
Indeed interesting/exciting election					0,14 (0,49)	0,002	-0,27 (0,53)	-0,0014
Clear party differences (ref=Not clear party differences)								
Indeed clear party differences					0,06 (0,48)	0,0008	-0,26 (0,52)	-0,0014

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[5] Naturally, predicted probabilities for *Age squared* not included

	Model 1 Coef	ΔPP	Model 2 Coef	ΔPP	Model 3 Coef	ΔPP	Model 4 Coef	ΔPP
Opinion about the election campaign (ref=Too much party bickering)								
Not too much party bickering					0,22 (0,65)	0,003	0,03 (0,68)	0,001
Convinced to vote (ref=Not convinced)								
Convinced					-0,75 (0,51)	-0,013	-0,25 (0,55)	-0,006
Constant	5,53* (3,03)		2,27** (0,65)		3,51*** (0,45)		5,76* (3,17)	
Pseudo R^2	0,1392		0,0827		0,0377		0,2118	
N	1,125		1,125		1,125		1,125	

Note: Dependent variable *Electoral turnout* (1=voted, 0=not voted). Entries are coefficients, standard errors and predicted probabilities (Δ*PP*) from logistic regression computed using Stata. Standard errors in brackets. Number of observations hold constant due to missing values. *** , ** and * denote statistical significance at 1, 5 and 10 per cent, respectively.
Source: SNES (2018) for the Swedish parliamentary election 2018 and SNES (2019b) for the EP election 2019

Appendix D: Logistic regression of effects on the dependent variable *Electoral turnout* during the European Parliament election 2019

	Model 1		Model 2		Model 3		Model 4	
	Coef (S.E)	ΔPP	Coef (S.E)	ΔPP	Coef (S.E)	ΔPP	Coef (S.E)	ΔPP
VAA usage (ref=Not used VAAs)								
Used a VAA	1,23*** (0,22)	0,14	1,15*** (0,21)	0,13	1,22*** (0,21)	0,14	1,30*** (0,23)	0,13
Gender (ref=Female)								
Male	0,11 (0,21)	0,01					0,08 (0,23)	0,007
Age	0,02 (0,06)	0,004					0,01 (0,06)	0,003
Age squared[6]	0,0002 (0,0006)						0,0003 (0,0006)	
Education (ref= Low education)								
Medium education	0,28 (0,43)	0,04					0,27 (0,46)	0,03
High education	0,90** (0,45)	0,11					0,76 (0,47)	0,08
Income (ref=Low income)								
Medium income	-0,07 (0,29)	-0,01					-0,02 (0,31)	-0,007
High income	0,37 (0,28)	0,03					0,48 (0,30)	0,04
Marital status (ref=Single/Widow/Widower)								
Cohabitant/Married/Partnership	0,15 (0,24)	0,02					0,13 (0,25)	0,01
Place of residence (ref=Rural area)								
Small town/village	0,08 (0,33)	0,01					0,10 (0,35)	0,009
Big town/City	0,12 (0,30)	0,01					-0,002 (0,31)	-0,0003
Large city	0,82** (0,38)	0,07					-0,75* (0,40)	0,06
Member in trade union/professional organization (ref=Not member)								
Member			0,18 (0,20)	0,02			0,20 (0,23)	0,02

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[6] Naturally, predicted probabilities for *Age squared* not included

	(1)	(2)	ΔPP	(3)	ΔPP	(4)	ΔPP
Political interest (ref=Not interested)							
Interested		1,09*** (0,20)	0,14			0,65*** (0,23)	0,06
Political affiliation (ref=Not identify with a party)							
Identify with a party		0,28 (0,22)	0,03			0,06 (0,24)	0,005
Ideology		-0,07* (0,04)	-0,007			-0,09** (0,04)	-0,008
Political effect (ref=Not interesting/exciting election)							
Indeed interesting/exciting election				0,74** (0,227)	0,07	0,62** (0,28)	0,05
Clear party differences (ref=Not clear party differences)							
Indeed clear party differences				0,61*** (0,21)	0,06	0,65*** (0,23)	0,06
Opinion about the election campaign (ref=Too much party bickering)							
Not too much party bickering				-0,05 (0,24)	-0,005	-0,06 (0,25)	-0,005
Convinced to vote (ref=Not convinced)							
Convinced				-1,03*** (0,22)	-0,13	-0,82*** (0,24)	-0,09
Constant	-1,48 (1,25)	0,71** (0,33)		1,07*** (0,17)		-1,25 (1,35)	
Pseudo R^2	0,1103	0,0961		0,1031		0,1774	
N	884	884		884		884	

Note: Dependent variable *Electoral turnout* (1=voted, 0=not voted). Entries are coefficients, standard errors and predicted probabilities (Δ*PP*) from logistic regression computed using Stata. Standard errors in brackets. Number of observations hold constant due to missing values. *** , ** and * denote statistical significance at 1, 5 and 10 per cent, respectively.
Source: SNES (2018) for the Swedish parliamentary election 2018 and SNES (2019b) for the EP election 2019

Appendix E: Predicted Probability of voting in the Swedish parliamentary election 2018 depending on age categories

Source: SNES (2018)

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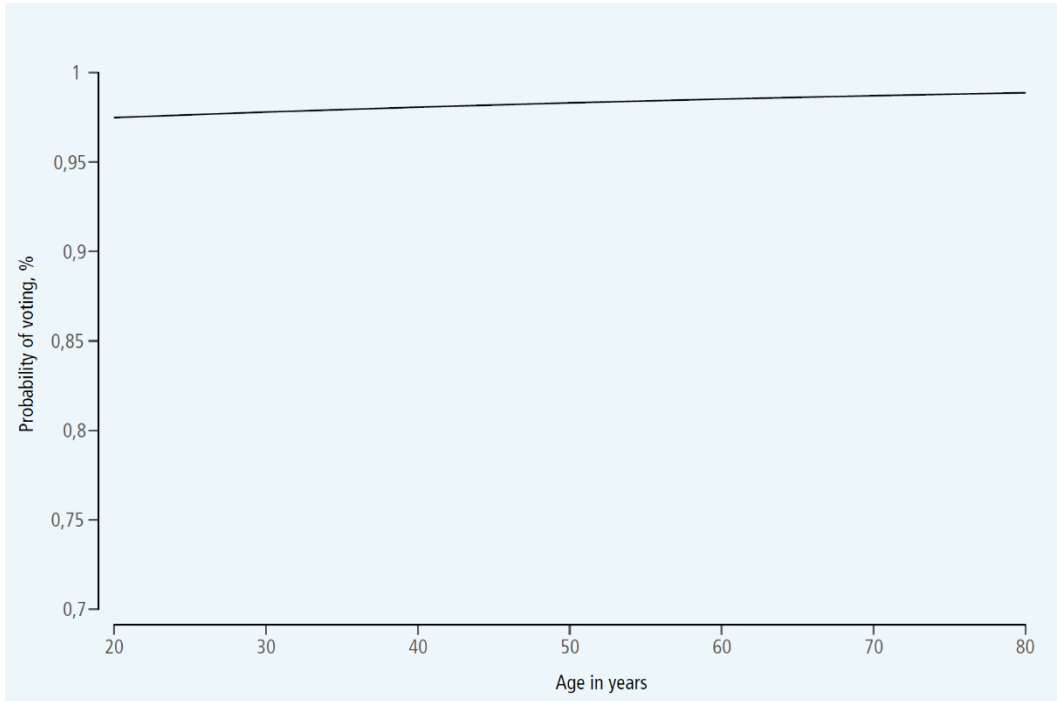
The Swedish National Election Studies Program was established in 1954 by Jörgen Westerståhl and Bo Särlvik and is today a high profile network of researchers at the Department of Political Science in Gothenburg. The Program serve as a collaborative platform for Swedish and international scholars interested in studies of electoral democracy, representative democracy, opinion formation, and voting behavior.

The aim of our research is among others to explain why people vote as they do and why an election ends in a particular way. We track and follow trends in the Swedish electoral democracy and make comparisons with other countries.

Professor Henrik Ekengren Oscarsson is the director of the Swedish Election Studies Program.