

The Impact of VAAs on Vote Switching at the 2019 Belgian Legislative Elections: More Switchers, but Making Their Own Choices

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1 Introduction

How do citizens decide on their vote choice? It is a question that numerous scholars have paid attention to. While early theorists and studies posited that a person's vote is rather stable, more recent work points to the rise in electoral volatility: citizens frequently switch their vote choice between elections. Several theories exist as to why electoral volatility is on the rise. Some claim that traditional social and cultural cleavages have become weaker: citizens do not necessarily vote in agreement with the social groups they belong to. In this context, the importance of issues might be on the rise. Instead of voting in line with the social groups, citizens might rather focus on the issues at stake and elect a party or candidate that best matches their individual preferences. Electoral volatility exists not only between elections but also during electoral campaigns. Indeed, a substantial part of citizens switch their party preferences during the electoral campaign. During the 2019 Belgian elections, 20.8% of Flemish respondents and 21.6% of Walloon respondents switched their initial vote preference. Why did they switch and what made them reconsider their voting preference?

Issue voting models assume that voters are rational decision-makers and argue that citizens should elect parties that are closest to their own issue positions. In this regard, the spread of voting advice applications (VAAs) is particularly interesting. The main goal of these tools is to link voters' preferences to parties' policy proposals; these tools then highlight the proximity between the user and the available political parties (Walgrave, Nuytemans & Pepermans, 2009, p. 1161). In practice, users fill in a web survey according to their opinions on a set of issues. By comparing their position with those of political parties, the applications generate voting advice and suggestions (Cedroni & Garzia, 2010; Garzia & Marschall, 2019).

VAAs have found their place in the information environment of election campaigns, including in Belgium where the *Stemtest* (in Dutch) and the *Test électorale* (in French) are widely used. The *Test électorale* rendered about 1 million VAA advices during the 2019 electoral campaign, while the *Stemtest* amounted to about 3.4 million advices.

Due to their rising success since they were launched two decades ago, VAAs have been the object of studies. Munzert et al. (2020) describe how three different approaches have been used for studying the impact of VAAs on vote choice: observational panel data, observational selection models and experimental research

design (see Enyedi, 2016; Mahéo, 2016; Pianzola, Trechsel, Vassil, Schwerdt & Alvarez, 2019; Vassil, 2011). Most observational studies find that VAAs have a significant positive impact on voting decisions (see Andreadis & Wall, 2014; Klein Kranenburg, 2015; Kleinnijenhuis, van de Pol, van Hoof & Krouwel, 2017; Pianzola, 2014a; Pianzola, 2014b; Ruusuvirta & Rosema, 2009). However, Walgrave, Van Aelst and Nuytemans (2008) find little to no evidence of a significant impact of VAAs on voting behaviour in Dutch-speaking Belgium. Furthermore, experimental studies also find little to no effect of VAA results on voting behaviour (see Enyedi, 2016; Mahéo, 2016; Pianzola et al., 2019; Vassil, 2011).

In light of these conflicting findings, we use panel data to uncover the effect of VAAs on vote switching during the 2019 electoral campaign for the Belgian federal elections. More specifically, we study the impact of confirming/disconfirming advice provided by the VAA on vote switching. The case of Belgium is interesting because VAAs are widely used, yet seem to have little impact on voting behaviour (Walgrave et al., 2008). Moreover, the country allows us to distinguish between regions where VAAs have been used since the early 2000s (Flanders) and regions where VAAs are a more recent phenomenon (Wallonia).

In a context of increasing electoral volatility and the possible prominence of issue voting, VAAs (and more particularly the results provided by the VAA) might affect users' voting choice during the campaign. Therefore, we investigate the impact of a (dis)confirming advice from a VAA on vote switching. Do users switch party when they receive a result that confirms/contradicts their initial preference? Secondly, we wonder if users actually follow the advice provided by the VAA. Do users vote in line with the VAA's suggestion? We use panel surveys – provided by the 2019 Represent Belgian Election Study that probed voters before and after the 2019 Belgian federal elections. Our study shows that having a disconfirming advice from a VAA increases users' probability to switch their voting choice. However, switchers do not always follow the advice provided by the VAA and vote, most of the time, for a different party.

2 From Stability to Volatility: How VAAs Affect Vote Switching

Our core goal is to understand the extent to which voting advice applications (VAAs) can affect voters' propensity to switch parties during the campaign. In that context, we first discuss the classical models of voting behaviour to explain electoral choice. While early models predicted electoral stability, electoral volatility has risen steadily in recent decades. Therefore, we turn to rational choice models of electoral choice, which can explain why citizens change their vote. Finally, we discuss the existing research that investigates VAAs' impact on voting behaviour and develop our hypotheses.

Classical models of voting behaviour – that is, the Columbia model, the Michigan model and cleavage theory – consider the voting choice to be rather stable. These respective models argue that citizens vote in line with their social groups, party preferences or the social/cultural cleavages present in a society. The Columbia model, developed by Paul Lazarsfeld's team (1944), is based on a longitudinal study in which researchers found that individuals vote according to the social group they belong to. Hence, they emphasise the role of these groups and socio-demographic variables on political attitudes that in turn largely determine voting behaviour. Moving beyond socio-demographic variables, the 'Michigan' model rather emphasises the effect of psychological determinants on the vote choice (Campbell, Converse, Miller & Stokes, 1980). Scholars that support the Michigan model highlight that party identification is the key for understanding and predicting one's vote. However, they do acknowledge that variables such as age and parents' party identification matter. Furthermore, adherents of the Michigan model argue that party identification increases with age and is enhanced by a high political interest. Lastly, Lipset and Rokkan (1967) explain that social and cultural cleavages determine not only the party landscape but also voters' individual voting decisions. In fact, the social and cultural cleavages present in society crystallise into political cleavages that may linger on for many decades. In

sum, these three models explain electoral stability: citizens determine their vote choices based on the social/cultural groups they belong to and their party preferences and then stick to it.

However, later studies criticise these classical models for underestimating electoral volatility. Perderson (1979) found that party systems in terms of the net electoral volatility might vary more than existing theories up to that point had predicted. Indeed, during the last Belgian elections of 2019, electoral volatility was high (see van Erkel et al., 2019). Not only was the net volatility high between the 2014 and 2019 elections (16.8% in Flanders; 16.7% in Wallonia), the gross volatility was even higher with 32.2% of Flemish and 31.6% of Walloon voters changing parties between 2014 and 2019. Even more, citizens switch their vote choice not only between elections but also during campaigns. Indeed, according to the same panel survey, 20.8% of Flemish respondents and 21.6% of Walloon respondents switched their initial voting preference during the 2019 campaign. These elements highlight that the explanatory power of the classical literature regarding voting behaviour loses strength and might benefit from complementary explanations regarding electoral switching.

Scholars have looked at political sophistication and political frustration to explain electoral switching. Firstly, Dalton (1984) suggests that the process of ‘cognitive mobilisation’ (which refers to an increase in political sophistication among citizens due to rising levels of education and a media revolution) might increase the amount of ‘floating voters’. The higher level of political sophistication among citizens might provoke a decline in the number of people who identify themselves with a single party (Dalton, 1984), which could in turn cause a surge in electoral volatility (Dalton & Wattenberg, 2002). Despite empirical support for this theory, other studies suggest an opposite mechanism: voters who are well informed have more knowledge and hence are more stable in their vote choice (Albright, 2009; Marthaler, 2008). Some also find that volatile voters can be both highly and lowly informed (Granberg & Holmberg, 1990). Dassonneville (2012) studied electoral volatility in the 2009 Belgian elections and found that voters with low levels of political efficacy tend to switch more often between elections and during the campaign. She also emphasises that lowly sophisticated voters tend to switch their voting choice during the campaign, while highly sophisticated voters switch their vote before the beginning of the campaign. A second explanation for electoral volatility, developed by Zelle (1995), is linked to political frustration: voters that are dissatisfied with the political system might switch more due to macro stimuli (economic conditions, historic events). Zelle (1995) argues, therefore, that frustration towards politics is a driver for electoral volatility.

Another important explanation for electoral volatility comes from theories that start from the assumption that voters are rational decision-makers (Buchanan & Tullock, 1962; Downs, 1957). According to rational choice models, individuals have clear preferences. When confronted with a set of choices, they engage in a cost-benefit analysis of the different choices in order to select the optimal option (Dormagen & Mouchard, 2015). Thus, citizens elect parties or candidates that best match their preferences. In effect, derived from the rational voter framework, some scholars argue that the lowering trend of party identification might be the consequence of ‘issue voting’ (Key, 1966; Nie, Verba & Petrocik, 1979). According to issue voting models (also known as ‘spatial models’ or ‘proximity models’), voters have preferences about the policies they want to see implemented. They then compare their preferences with the policy proposals of the available parties or candidates and elect the party or candidate that comes closest to their own preferences. Actually, this model explains politics as a market where the ‘demand’ side meets the ‘supply’ side. Changes in the preferences of either side might cause vote switching during the campaign. With the decline of traditional cleavages and the rise of electoral volatility, the importance of issue voting might have increased (Walgrave et al., 2008).

In order for the political market to function properly, information on the relevant issues and on parties’ policy proposals is crucial. In this context, electoral campaigns are important periods for voters to gather information so that they can develop preferences and recognise what parties or candidates propose. Indeed, political

knowledge increases during campaigns (Chaffee, Zhao & Leshner, 1994; Holbrook, 2002). This increase in citizens' knowledge of parties' issue positions helps voters to choose the party that is most congruent with their opinion (Kleinnijenhuis & De Ridder, 1998). However, election campaigns sometimes risk overwhelming voters with (conflicting) information. Excessive flow of information makes it more difficult for voters to easily make the optimal voting decision (Lau & Redlawsk, 2006). The task of voting is even more complex in an environment like the Belgian case, where multiple parties compete in a highly fractionalised party system (Walgrave, Lesschaeve, Rihoux & Meulewaeter, 2015).

Since the 2000s, specific tools have emerged that fit the logic of proximity models: VAAs. These tools reduce the costs of gathering political information and help voters make sense of the political landscape. Simply put, VAAs compare voters' policy preferences to parties' policy proposals and generate voting advice. In practice, users fill out a web survey that probes their preferences on a set of issues. By comparing their issue positions with those of political parties, the applications generate voting advice and suggestions (Cedroni & Garzia, 2010; Garzia & Marschall, 2019). Based on this comparison, users of the tool can easily find out to what degree their preferences match those of the available parties, that is, the proximity to the available parties (Walgrave et al., 2009). VAAs have found their place in the information environment of election campaigns, including in Belgium where *De Stemtest* (in Dutch) and the *Test électorale* (in French) are widely used. As such, we might expect an impact of VAA use on citizens' voting decisions. Our goal is to assess the impact of VAAs on electoral volatility among users during the campaign of the 2019 Belgian federal elections.

Up until yet, the impact of VAAs on vote switching remains unclear (see Munzert et al. 2020). Some researchers find rather strong effects of VAA use on vote choice, while some other scholars do not. Kleinnijenhuis et al. (2007) find that VAAs had a significant impact on the 2006 Dutch elections. Similarly, Boogers (2006) shows that 27.4% of users of StemWijzer indicated that the VAA had an impact on their party preferences. This study, however, looks at voters' self-declared swing behaviour. Other scholars argue that the actual impact of VAAs on citizens' vote choices should be strongly relativised. Indeed, Walgrave and colleagues (2008) warn of the difference between self-declared behaviour and actual behaviour. They studied the effect of the Belgian VAA and TV show that accompanied it in the 2004 Belgian elections and discovered that only half of the 8.2% of respondents who said that the VAA made them doubt about their voting decision actually changed their vote. Furthermore, even among the voters (1.1%) who said that the VAA made them change their vote, only two-thirds of them actually changed their vote (Walgrave et al., 2008 p. 43). Furthermore, voters might have other predispositions towards parties regardless of a VAA that might explain their vote choice. Indeed, Kleinnijenhuis et al. (2017) separate the potential VAA effects from the genuine VAA effects on vote choice. They discover small but genuine VAA effects on voting choice, with doubting voters being especially susceptible to switch their vote. Nonetheless, they argue that a change in the vote choice cannot be attributed to the VAA if the voter already had several predispositions in favour of that party or when the voter has no positive predispositions in favour of that party.

Some authors have turned to experimental methods to isolate the impact of VAAs on electoral behaviour (Enyedi, 2016; Garry, Tilley, Matthews, Mendez & Wheatley, 2019; Mahéo, 2016). Enyedi (2016) reports that VAAs did not have an effect on vote choice. Mahéo (2016) finds that the effects on preference formation are only limited in time and does not find evidence that receiving a contradictory advice from the VAA leads to vote switching. Garry et al. (2019), using a field experiment, also find minimal effects of VAAs on party preferences in the deeply divided Northern Ireland. They conclude that VAAs have an impact at the individual level, with users putting their party preferences more in line with their ideology after VAA use. In sum, authors that use experimental methods find little (lasting) effects of VAAs on the electoral choice.

While experimental studies find little to no effect of VAA results on voting behaviour

(see Enyedi, 2016; Mahéo, 2016; Pianzola et al., 2019; Vassil, 2011), the reverse is suggested by observational studies (see Andreadis & Wall, 2014; Klein Kranenburg, 2015; Kleinnijenhuis et al., 2017; Pianzola, 2014a; Pianzola, 2014b; Ruusuvirta & Rosema, 2009). Some of the weaknesses of these studies are that they generally focus on vote switching *between* elections rather than *in-campaign* switching (e.g. Andreadis & Wall, 2014) or do not often include control variables that allow to isolate the impact of the VAA advice on vote switching (e.g. Ruusuvirta & Rosema, 2009). In contrast to most observational studies that rely on panel data, however, Walgrave et al. (2008) find little to no evidence of an impact of VAAs on voting behaviour in Belgium.

Our main aim is to contribute to the debate on VAAs' impact on vote choice. More specifically we endeavour to better understand *in-campaign* vote switching, by using data collected during the 2019 Belgian federal elections. We argue, based on the premises of issue voting, that VAA users do take the results of the tool into account before making a final voting decision. Most studies compare the impact of these applications between users and non-users. We, instead, focus on the effect of the tool's results among users. Firstly, we argue that VAA users are more likely to switch their vote choice if the VAA result goes against their initial party preference. When users are confronted with a result that does not back up their initial voting intention, they might reconsider their final vote. Indeed, according to rational voter models, citizens should consider all information before coming to a voting decision. A VAA might provide citizens with a more complete picture of the political landscape. A rational voter would then question her initial voting intention and, if necessary, alter it. Therefore, we state the following first hypothesis:

H1: VAA users who received a disconfirming advice from the VAA switch their vote more often than users who received a confirmatory advice.

Secondly, we expect that users will switch in line with the advice provided by the VAA. VAAs not only (dis)confirm users' initial vote intention, they also introduce users to the electoral choice that best matches their preferences. Despite evidence of relatively minor effects of VAAs on voting decisions (Enyedi, 2016; Kleinnijenhuis et al., 2017; Mahéo, 2016), we think it is sound to argue that the complementary and compact information given by the VAA makes an adequate voting decision (in terms of proximity of policy preferences) easier to reach (Lau, Patel, Fahmy & Kaufman, 2014). Thus, our second hypothesis is the following:

H2: VAA users who received a disconfirming advice from the VAA switch their vote in line with their VAA result.

3 Data and Methods

In this study, we rely on data collected by the EOS RepResent consortium, a collaboration between five Belgian universities (UCLouvain, Universiteit Antwerpen, ULB, VUB, KU Leuven).¹ To investigate voters during the 2019 Belgian elections, the consortium used panel data provided by Kantar TNS. The internet sample is representative in terms of age, gender and education. A total of 1,975 Flemish and 1,431 Walloon respondents completed both waves. The first wave was launched on 9 April and ended on 15 May. The second wave was launched after the elections (held on 26 May), on 28 May, and ended on 18 June.

In the second wave, respondents were asked whether they had used *De Stemtest/Test électoral*, a Belgian VAA that was launched on 3 April, before the launch of the first wave. The *Stemtest/Test électoral* is a VAA developed by academics from the University of Louvain and the University of Antwerp, in partnership with four Belgian media partners (VRT, RTBF, De Standaard and La Libre). Both Flemish and Francophone parties were asked to report their positions on a wide range of policy statements. The builders then selected a set of 25 to 35 policy statements for each VAA (the number of statements varied for the respective VAAs that were covering the

federal, regional or European Parliament elections). Users could either ‘Agree’ or ‘Disagree’ with each one of these statements.² After answering the set of statements, they were given the option of giving extra weights to specific policy questions before getting their results. In the result section, users could see a rank-ordered list of the score for every party that was included in the VAA. They also had the possibility to compare their position on the different policy statements with those of the parties. For the purpose of this study, we focus specifically on users who completed the version of *De Stemtest/Test électoral* relevant to the federal level.

In the analysis, we are interested in the effect of VAAs on voters’ final preference. Therefore, we assume that respondents completed the VAA after filling in the first wave of the panel survey in which they mentioned their initial preference. We control for other variables to isolate the impact of the VAA on vote switching. Unfortunately, we did not include a question in the first wave that probed if the respondent had already used the 2019 VAA prior to the first wave. This means that we cannot determine with certainty that the respondents completed the VAA before or after the first wave. As a result, we might underestimate the impact of VAAs on vote switching. A more crucial question, perhaps, is how long VAA effects on voting decisions last. VAA users might only be briefly influenced by the VAA results. Also, respondents that completed the VAA before the first wave of the panel survey might have already changed their vote preferences accordingly. They can even change it back to their initial preference by the time of the elections. The duration of VAA effects is thus essential but cannot be addressed in this analysis.

In order to answer our research question, we look at the impact of *De Stemtest/Test électoral* on vote switching. In the results section, we briefly describe who used the VAA. We then conduct two analyses to test our hypotheses: firstly, we use a logistic regression to test the impact of VAA results on vote switching; to answer our second question, we compare the percentage of switchers who switched towards a party recommended by the VAA and the percentage of switchers who changed to another party. Further, we cross-tabulate users’ advice with their final voting choice to check, using association measures (Pearson’s Chi-square), if they switch in line with the VAA’s advice (see Table B of the Appendix). We account for the particularity of the Belgian political system by running separate analyses for the two biggest regions, Flanders and Wallonia. Each region has its own party system. Also, the Belgian VAA has a different notoriety in each region. Indeed, the first VAA in Flanders was launched in 2003, more than 10 years before the first French-speaking version of the VAA in Wallonia.

For the first analysis, we created a binary dependent variable that measures vote switching by comparing the individual’s voting intention before the elections (wave 1) with their actual (declared) vote (wave 2). A substantial part of the Belgian respondents used the federal version of *De Stemtest/Test électoral*: 35.08% of the 1975 Flemish respondents and 24.45% of the 1431 Walloon respondents indicated that they used the federal VAA. To test our first hypothesis (H1), we created a measure that we call ‘disconfirming advice’. This measure equals one if the initial voting intention differs from the first party that was recommended by the VAA and zero if they are the same (399 confirming advices and 642 disconfirming advices were delivered). Further, we created a measure that compares the actual (declared) vote with the VAA recommendation. The measure equals one if the declared vote in wave 2 is similar to the advice provided by the VAA and amounts to zero if it is different. This measure allows us to acknowledge if the switchers genuinely switched towards the party provided by the VAA (H2).

Based on the literature mentioned in the previous section, we use five sets of control variables (see Appendix for details). The first group consists of socio-demographic variables: we control for age, gender (male = 0, female = 1) and the level of education (a categorical variable with three categories: 1 for those who have not finished full secondary school, 2 for those who finished secondary school and 3 for those who have a degree from higher education). Further, we control for the individual’s political attitudes by looking at their level of external efficacy (principal component analysis (PCA) based on eight items, Cronbach’s alpha = 0.7342), political trust (PCA based

on four items, Cronbach's alpha = 0.933) and political interest (11-point scale). We also include a variable that probes respondents' position on a left-right ideological scale (self-position on a 0-10 left-right scale). Further, we check the level to which the respondent was exposed to the electoral campaign (PCA based on seven items, Cronbach's alpha = 0.8181). Lastly, we use a measure of political frustration based on the respondent's satisfaction with the policies taken by the federal government. We use voters' political knowledge as an indicator of political sophistication (Lachat, 2007).

4 Results

Before studying the impact of VAA advice on vote switching, we first describe the profile of Belgian VAA users. Scholars who study VAA users commonly assert that users differ from the general population (see Boogers & Voerman, 2003; Hooghe & Teepe, 2007). In fact, the typical VAA user has a profile that is similar to the one of the internet user: young, male, with a higher level of education and with an above-average income (Fivaz & Nadig, 2010; Ladner, Fivaz & Pianzola, 2012). Despite the further proliferation of the internet, these elements can also be found among the 2019 *Stemtest/Test électorale* users. Indeed (as shown in Table A in the Appendix), both in Flanders and Wallonia, users are younger, higher educated, show a high interest in politics and followed the campaign intensively. Our results from the Belgian legislative election of 2019 corroborate the existing knowledge in the literature of VAA users. However, we do find a surprising effect of age among Walloon and Flemish voters: the '65 to 74' years old age categories are slightly but significantly over-represented. This might indicate that older citizens are finding their way to these online applications (see Table A of the Appendix). Indeed, VAA users have been depicted as being rather young in the VAA literature (Fivaz & Nadig, 2010; Ladner, Fivaz, & Pianzola, 2012).

Now that we have a better grasp of 'who' VAA users are, we assess the potential impact of VAAs' advice on voters using a logistic regression, with vote switching between the first wave and the second wave of the survey as the dependent variable. We ran separate models for Flanders and Wallonia as they are two different cases in terms of VAA use and the party system. A total of 30.80% of the Flemish respondents who used the federal VAA (n = 692) switched their voting preference during the campaign. Among all Flemish VAA users, 57.66% received a disconfirming advice from the VAA. Among the Walloon respondents who used the VAA (n = 347), 40.50% switched their voting intention and 70.03% of the Walloon users obtained a disconfirming advice from the VAA.

Table 1 Effect of a disconfirming advice of the *Stemtest/Test électorale* on vote switching (coefficient reported).

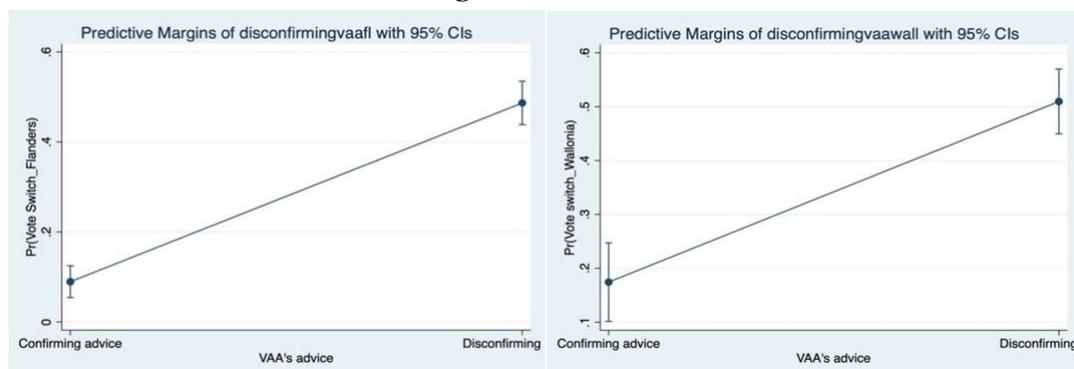
Vote switching w1-w2 (=1)	Flanders	Wallonia
	Coefficient (std. errors)	Coefficient (std. errors)
Disconfirming advice from the VAA (=1)	2.438** (0.25)	1.752** (0.31)
Female (=1)	0.181 (0.22)	0.500+ (0.26)
Age	-0.010 (0.01)	-0.002 (0.01)
Lower education (ref. = middle level education)	0.026 (0.39)	-0.508 (0.53)
Higher education (ref. = middle level education)	-0.378 (0.21)	-0.415 (0.28)
Political knowledge	-0.131+ (0.07)	-0.085 (0.08)

Political interest	-0.100* (0.05)	-0.121* (0.06)
Trust PCA	-0.067 (0.10)	0.120 (0.10)
External efficacy PCA	-0.054 (0.08)	-0.073 (0.09)
Left_Right	-0.002 (0.05)	0.108* (0.05)
Satisfaction with policies	-0.085 (0.07)	-0.096 (0.07)
Campaign exposure PCA	-0.006 (0.06)	-0.080 (0.08)
Intercept	-0.154 (0.58)	-0.528 (0.67)
Number of observations	692	347
Cragg & Uhler's (Nagelkerke) pseudo R²:	0.368	0.255

Significance level: ** <0.01; * <0.05; + <0.1

The results in Table 1 show that having a disconfirming advice from the VAA has a strong positive impact on vote switching among VAA users. While controlling for other variables that could explain vote switching, the effect of our variable is statistically significant, which indicates that having a confirming or a disconfirming advice might play a significant role in predicting users' vote switching. This corroborates our first hypothesis: VAA users who received a disconfirming advice from the VAA tend to switch more often than users who received a confirmatory advice from the VAA. Furthermore, the effect of a disconfirming advice is significant in both regions. However, the effect of a confirming advice is stronger among Flemish users (see graphs 1a and 1b). The probability that Walloon voters who received a disconfirming advice switch their initial vote choice is 50.97% (s.e. = 0.031) while it reaches 17.44% (s.e. = 0.037) for voters who received a confirming advice. In Flanders, the predicted probability that a user switches vote preference after obtaining a disconfirming advice is 48.67% (s.e. = 0.025) and only 8.96% (s.e. = 0.017) for a voter who received a confirming advice. Evidently, Flemish voters will not switch their vote preference more often than Walloon voters after receiving a disconfirming advice. Rather, voters from Flanders who obtained a confirming advice are more confident in their initial preference than Walloon voters. The greater effect of VAA results on vote switching in Flanders might also be linked to the fact that VAAs have been used since the early 2000s. The tools are thus more established in the region and citizens are possibly more eager to rely on its results.

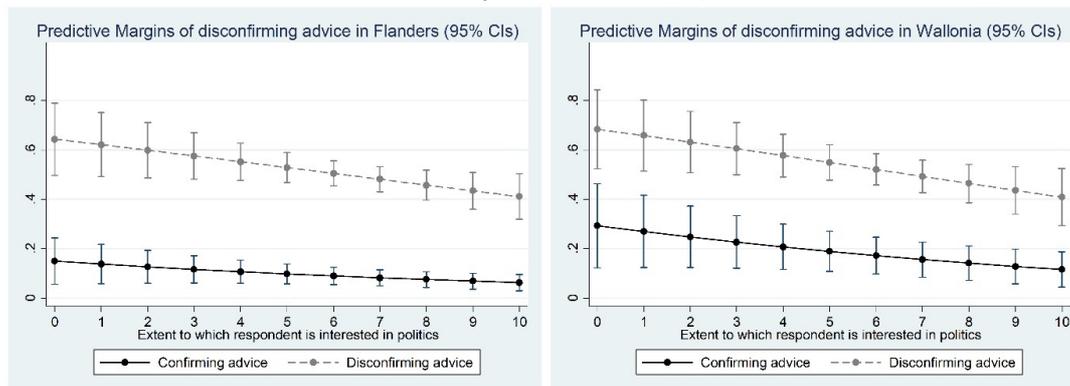
Graphs 1a and 1b: Predictive margins of a (dis)confirming advice on vote switch in Flanders (left) and Wallonia (right).



Further, we find a negative effect of political interest on vote switching, in both regions. The odds of switching are lowered by 9.52% in Flanders and by 11.4% in Wallonia for a one-unit increase in political interest. Graph 2a and 2b show the decreasing relationship between predicted probabilities of vote switching and (higher) political interest. However, we find no convincing evidence regarding the

effect of political knowledge on vote switching. These findings tend to relativise the suggestion from cognitive mobilisation theory regarding the link between higher level of sophistication and electoral volatility. However, one of the explanations regarding the results might be found in the work of Dassonneville (2012), who argues that sophisticated voters decide on their final vote before the beginning of the campaign. Considering the fact that our data were collected during the campaign, following Dassonneville’s findings, most of the sophisticated voters would have switched before answering our survey.

Graphs 2a and 2b: Predictive margins of disconfirming advice in Flanders (left) and Wallonia (right) on vote switch in relation to the level of political interest (not interested at all = 0 to extremely interested = 10).



However, these results, do not tell us much about the direction in which users ‘switched’. One of the principal arguments of VAA supporters is the fact that it might help voters to vote more in line with their policy preferences. In other words, VAAs could help users to vote for the party that is most ‘issue-congruent’ with them and, therefore, increase citizens’ chances of being well represented in terms of policies. Many scholars argue that being well represented might be essential to come near the ideal of democracy (Dahl, 1989; Lau & Redlawsk, 2006; Lau et al., 2014). Therefore, if a disconfirming advice from the VAA leads one to vote for another party, one reasonable expectation would be that the party one would switch for is the party recommended by the VAA. If we assess that VAAs encourage citizens to cast votes for parties that resemble their policy preferences, it might generate better substantive representation, which in turn might generate a higher level of policy congruence between citizens and elected parties.

In order to examine the question, we investigate whether VAA users switch their final vote choice in line with the VAA’s result.³ The results from table 2 show a similar trend in both regions. A large amount of VAA users (41.6% in Flanders; 56.9% in Wallonia), despite having a disconfirming advice, kept a stable voting preference between the two waves of the survey. This finding corroborates the results of Walgrave et al. (2008) in Belgium where they found that VAAs had a minor effect on vote switching. Indeed, users who received a confirming advice and keep a stable vote decision are more numerous. By contrast, users who got a disconfirming advice are less numerous than expected according to the Chi-square distribution to keep their voting decision.

Table 2 Switchers’ vote in comparison with VAA’s advice.

	Flanders			Wallonia		
	Corresponds to the VAA advice (%)	Does not correspond to the VAA advice (%)	Total	Corresponds to the VAA advice (%)	Does not correspond to the VAA advice (%)	Total
Stable	58.4	41.6	466	43.1	56.9	204

vote w1- w2						
Switchers w1-w2	40.1	59.9	227	28.5	71.5	144

However, we have to reject our hypothesis about the direction in which switchers change their vote. Indeed, while the previous analysis has shown that VAA users tend to switch more when they receive a disconfirming advice, this analysis shows us that they do not necessarily switch in line with the VAA's advice. Unfortunately, the low number of switchers, specifically in Wallonia, does not allow us to reliably analyse the transfer of votes between each political party.

Nonetheless, two explanations might help to understand the rejection of our hypothesis. On the one hand, we know that many VAA users are either *doubters* or *seekers*: both types of users employ VAAs to make a voting decision (van de Pol, Holleman, Kamoen, Krouwel & De Vreese, 2014). Thus, having a disconfirming advice might push people to question their initial choice and switch their vote to another party without considering the advice given by the VAA. In other words, when the VAA provides a disconfirming advice, it tells the users that the proximity between their preferred party and them is suboptimal. It shows them that their party is not the best option in terms of issue congruence and the discontent caused by the results might cause them to switch to another party. On the other hand, voters who used the VAA and switched their vote were more prone to change for another party and would have changed their vote regardless of the results of the VAA. In other words, some undecided voters at the beginning of the campaign would have changed their vote no matter what, and the VAA might have pushed them towards vote switching. However, further investigation would be needed to disentangle this mechanism.

5 Discussion and Conclusion

The emergence of VAAs as a widely used tool during election campaigns has prompted many researchers to study the quality, impact and reach of the tool. We explicitly link VAAs to issue voting models and argue that they help voters recognise the electoral option that is most proximate to their policy preferences. This study aimed to contribute to the literature by investigating the case of the 2019 federal legislative elections in Belgium. More specifically, in the context of rising electoral volatility, we studied the impact of VAA advice on vote switching during electoral campaigns.

Using the 2019 Represent Belgian Election Study, a two-wave panel survey, we could observe electoral volatility between the campaign by comparing respondents' voting intention a few weeks before the election to their declared vote a few days after the election (based on recall). Furthermore, in the second wave, we asked respondents whether they had used a VAA and what the voting advice was. However, we did not ask this question in the first wave of the survey; hence, we do not know if respondents used the VAA prior to answering our survey and declaring their vote intention. This means that the VAA might have already impacted their vote intention before the first wave of our panel survey. As a result, we might underestimate the true effect of the VAA. Nevertheless, our results still show a significant effect of a (dis)confirming advice on vote switching.

In this article, we mainly studied the impact of VAAs on voting behaviour. We briefly described the characteristics of VAA users: they are younger, highly educated, rather highly politically interested and followed the campaign intensively. While those findings corroborate the literature, we do find an over-representation of VAA users aged 55-64 in Flanders and 65-74 in Wallonia and Flanders, which might indicate that older citizens are finding their way to these online tools. More importantly, we investigated the impact of VAA results on vote switching. Considering the fact that receiving a disconfirming advice tells the users that the preferred party is a suboptimal choice, the hypothesis tested was the following: VAA users who receive a

disconfirming advice from the VAA switch more often than users who receive a confirmatory advice from the VAA. Our results show that in both regions, having a disconfirming advice from the VAA leads to vote switching, confirming the first hypothesis. Furthermore, when looking at the predicted probabilities, the impact is strongest among Flemish users compared to the Walloon users. In Flanders, VAAs have been present since the early 2000s. As a result, Flemish citizens perhaps trust VAA results more than Walloon citizens.

However, although we confirm that users who receive a disconfirming advice tend to switch more than users who receive a confirming advice, users do not necessarily change their vote in line with the VAA results. We hypothesised that voters who received a disconfirming advice would switch in favour of the party suggested by the VAA because it would be the party that is most congruent with the voters' issue positions. Unfortunately, our results are more mitigated: while 29% of Walloon users and 40% of Flemish users followed the advice given by the VAA, a significant majority of users switched to a different party. The rejection of our second hypothesis might be caused by the fact that some voters used it not only as a tool to help them choose their preferred party but also for entertainment purposes and to compare their positions with the party they want to vote for. Therefore, when the VAA provides a disconfirming advice, it informs the users their party is not the best option in terms of issue congruence, and the discontent caused by the test might lead users to re-examine their decision and vote for another party (even if not recommended by the VAA). An alternative explanation might be linked to the VAA itself. Indeed, as a result, the VAA displays a rank-ordered list of parties (from the more congruent to the less congruent) in percentages of closeness. The gap between the first and the second party is sometimes minimal, and users might have opted for the second/third best party due to marginal differences. These hypotheses should be tested in further analysis of VAA's impact on electoral volatility.

Finally, our research features some limitations that deserve consideration. Firstly, an endogeneity problem might be at play in the analysis. Wall, Krouwel & Vitiello (2014) state that endogeneity issues arise in VAA research because of two reasons. On the one hand, changes in issue positions might lead voters to other parties, regardless of VAA results. Indeed, parties or users can change their issue positions over time. VAA results will reflect this change in opinion. If a voter then switches his or her preferred party, rather than reflecting the genuine effect of VAAs on vote switching, the preference change reflects a change in own issue positions. Thus, it is not so much the VAA that pushes the voter to another party, but rather the change in their personal and/or the party's policy positions and because of events unrelated to the electoral campaign. On the other hand, in line with Ladner and Pianzola (2010) and Walgrave et al. (2009), Wall et al. (2014) specify that a large share of VAA users is undecided in their final vote. They argue that studying volatility between elections or during the campaign might "tell us more about the type of audiences that VAAs attract than about the effects that they may be said to exert" (p. 420).

A second limitation has to do with recall error, a known risk in VAA research. We did not possess the actual VAA outcomes of the respondents, but instead relied on their memory to inform us on their VAA results. However, Wall et al. (2014) demonstrate that many VAA users do not remember their VAA party advice correctly and that recall errors are consistently biased in favour of the party the respondent voted for. While we can be more certain about vote switching, thanks to two waves of data collection, we rely on users' (potentially biased) memory to report the advice received from the VAA. Nevertheless, this issue should mainly decrease the impact of our results and make the estimates more conservative. Indeed, if one's memory is biased towards the party they voted for, we might expect switchers to (declare to) vote in line with the VAA. As our analysis shows, this is not the case. Nonetheless, those results still do tell much about VAAs' impact on vote switching, specifically among switchers. The limitations of this study suggest the need for further research about the impact of VAAs on voting behaviour. The question of timing is crucial, and more specifically the question of the lasting VAA effect on vote preference. As of now, we do not know in detail how long the effects of VAA results on voting preferences last. Mahéo (2016)

suggests that the effects of VAAs are limited in time. Therefore, one path for further analyses might be to determine when the VAA has been completed by the respondents in order to account for the lasting effect of VAAs on vote switch (e.g. does the strength of the effect change as the elections get closer?). Moreover, as our results show that a disconfirming advice increases vote switching, further analyses should enable us to address some of the abovementioned limitations. Increasing the size of our sample would also enable us to deepen our investigation. Indeed, the relatively small number of respondents that completed the VAA did not enable us to explore the vote transfer between parties. Did the VAA significantly bolster some parties compared to others? It is quite challenging to empirically establish which party or parties benefited from the VAA since the proportion of switchers is relatively low. At this stage, we can nevertheless conclude that VAA results have a significant impact on vote switching during electoral campaigns.

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Appendix

Table A Comparison between Flemish/Walloon respondents and Flemish/Walloon users of the federal VAA.

	Share among Flemish respondents (%) (a)	Share among Federal Stemtest users (%) (b)	Difference (b-a)	Share among Walloon respondents (%) (c)	Share among Federal Test électoral users (%) (d)	Difference (d-c)
Gender						

Women	41.9	40.4	-1.5	51.4	48.1	-3.3
Men	58.1	59.6	1.5	48.6	51.9	3.3
Age groups						
18-24	6.6	8.2*	1.6	6.6	10.3*	3.7
25-34	10.1	12.3*	2.2	17.5	18.4	0.9
35-44	15.4	14.7	-0.7	19.4	18.4	-1.0
45-54	19.4	17.9	-1.5	25.0	20.1*	-4.9
55-64	21.1	17.5*	-3.6	21.8	19.0	-2.8
65-74	22.6	25.3*	2.7	8.1	12.1*	4.0
75+	4.7	4.2	-0.5	1.5	1.7	0.2
Educational level						
Low	12.4	7.2**	-5.2	12.4	6.6**	-5.8
Full secondary	40.0	32.6**	-7.4	36.8	28.4**	-8.4
High	47.6	60.2**	12.6	50.9	64.9**	14.0
Political interest						
Low	10.2	5.2**	-5.0	16.5	6.3**	-10.2
Rather low	12.8	11.1	-1.7	17.8	13.8*	-4.0
In the middle	14.4	10**	-4.4	14.5	11.5+	-3.0
Rather high	46.7	50.8*	4.1	40.0	50.6**	10.6
High	15.9	22.9**	7.0	11.1	17.8**	6.7
Intensity with which one followed the campaign						
Very intensively	10.0	15.4**	5.4	6.0	11.5**	5.5
Intensively	32.4	39.5**	7.1	24.5	35.1**	10.6
Not very intensively	43.1	40.1+	-3.0	44.8	44.5	-0.3
Not at all	14.5	4.9**	-9.6	24.7	8.9**	-15.8

Significance level: ** <0.01; * <0.05; + <0.1.

Note: Construction of the independent variables from Table A:

The 2019 Represent Belgian Election Study contained the question of whether the respondents used the VAA for the federal election or not. Hence, we compare Flemish and Walloon voters with federal VAA users in terms of socio-demographic (gender, age and educational level) and political variables (political interest and intensity with which one followed the campaign). We conducted **Chi-square tests** in order to assess significant differences between the sample of federal users and the population of respondents with certainty.

Political interest: the 11-point Likert scale political interest variable was recoded into a categorical variable (five categories), sorting them in a logical order according to the

scale of values to improve the readability of the table. The variable was recoded as follows (and only for the purpose of this table):

1. Low political interest: Respondents who indicated a score of 0 (= not interested at all) or 1
2. Rather low: Respondents who indicated a score from 2 to 4
3. In the middle: Respondents who indicated a score of 5
4. Rather high: Respondents who indicated a score from 6 to 8
5. High political interest: Respondents who indicated a score of 9 or 10 (= extremely interested)

Intensity with which one followed the campaign: we used a measure of campaign intensity in order to know our respondents' propensity to follow the campaign. We used it as the battery of question 'Campaign exposure' includes questions regarding newspapers. As the VAA was promoted by the media, it might cause an endogeneity problem regarding the use of the VAA. Indeed, did one use the VAA because he or she followed the media regularly and have had an incentive to do it or is it because he or she was interested in the tool because he or she followed the campaign? We therefore used another indicator: *Campaign intensity* with the following question:

How intensively did you follow the last electoral campaign?

Table B Switchers' vote in comparison with VAA's advice (Chi-square test).

	Flanders			Wallonia		
Followed the VAA advice	Did not follow the VAA advice	Total	Followed the VAA advice	Did not follow the VAA advice	Total	
Stable vote (w1-w2)	272	194	466	88	116	204
Expected n	197.7	268.3	466.0	61.6	142.4	204.0
Vote switch (w1-w2)	91	136	227	41	103	144
Expected n	118.9	108.1	227.0	53.4	90.6	144.0
Total	294	399	693	129	219	348
Expected n	294.0	399.0	693.0	129	219	348.0
	Chi sq. (1) = 20.4514	p = 0.000		Chi sq. (1) = 7.7822	p = 0.005	

Note: Construction of the independent and dependent variables from the logistic regression models:

Our dependent variable 'Vote switching' was constructed as follows:

We asked respondents their *vote intention* in the first wave of the survey (a few days/weeks before the election) and in the second wave, we asked for their 'effective' vote decision. While the first question should not suffer from any bias, the second is a

recall measure, which might add some noise to our measure. However, our variable was coded as 1 if the party choice between the two waves were different and 0 if they were the same.

Regarding our main independent variable, we created a measure of *confirming/disconfirming advice* from the (federal) VAA by looking at individuals' voting intentions compared to the (declared) advice given by the VAA. Moreover, we also created some measures that compare the actual (declared) vote with the VAA recommendation.

Regarding *education*, we created three categories: 1 for those who have not finished secondary school; 2 for those who have finished secondary school but not higher education; and 3 for those who graduated from higher education.

Regarding *political knowledge*, we asked six questions and attributed a score of 1 for each good answer and 0 for each bad/'I don't know' answer. The variable is the sum of correct answers and goes from 0 to 6. The questions were the following and were multiple choice question with four possible answers:

1. **The following six questions assess your general knowledge on politics. If you do not know the answer, you can simply respond 'I do not know'. The federal parliament is composed of ...**
2. **The president of the Chamber of Representatives is ...**
3. **How many states are in the European Union?**
4. **Who is the Flemish/Walloon Minister of Mobility? (depending on the region of the respondent)**
5. **Who elects the members of the European Parliament?**
6. **Which political issue is primarily handled on a European level rather than on the national or regional level?**

'Political interest' and 'left-right' were self-reported measures as used in the literature:

To what extent are you interested in politics in general? [0-10 scale: 0 = Not interested at all; 10 = Extremely interested] ⁴

In politics people often talk of 'left' or 'right'. Can you place your own convictions on a scale from 0 to 10, with 0 meaning 'left', 5 'in the centre' and 10 'right'? [0-10 scale: 0 = Left; 5 = Centre; 10 = Right]

A measure of *frustration* was used based on one's satisfaction with the policies developed by the government. The question asked was the following:

To what extent are you satisfied with the policies implemented by the following political decision-making entities in the past few years? (The federal government)

Finally, we used three measures that capture *political trust*, *campaign exposure* and *external political efficacy*. Those variables are based on specific batteries of questions and a measure for each variable has been constructed via a PCA where the first component was used in each case.

Political	On a scale of 0 to 10, what is your level of confidence in
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<p>trust Cronbach's alpha = 0.933</p>	<p>each of the following institutions? [0-10 scale: 0 = Absolutely no confidence; 10 = Complete confidence]</p> <ol style="list-style-type: none"> 1. Political parties 2. The federal parliament 3. Politicians 4. The European Union
<p>External efficacy Cronbach's alpha = 0.7342</p>	<p>Please indicate to what extent you disagree or agree with the following statements. [1 = Totally disagree; 2 = Somewhat disagree; 3 = Neither agree nor disagree; 4 = Somewhat agree; 5 = Totally agree]</p> <ol style="list-style-type: none"> 1. Most citizens do not have clear political preferences. 2. Political parties do not offer real political alternatives to the people. 3. Political parties give too much freedom to campaign advisers to determine important political issues.* 4. The influence of interest groups and lobbyists on policies is too big. 5. Voting is pointless because parties do what they want anyway. 6. In general, our political system functions fairly. 7. Our political decision-making processes are sufficiently transparent. 8. In general, our political system functions in an efficient way.
<p>Campaign exposure Cronbach's alpha = 0.8181</p>	<p>For each of the following channels, how many times did you see information about politics in the past month? [1 = Never; 2 = Less than once per week; 3 = 2-3 times per week; 4 = 4-5 times per week; 5 = 6-7 times per week]</p> <ol style="list-style-type: none"> 1. Television 2. News websites 3. Newspapers (press and online) 4. Social media 5. Posters of political parties 6. Advertisements of parties or candidates (in the press, social media and/or by post) 7. Political parties' websites

Noten

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1 <https://represent-project.be/>.

2 Although the effect of VAAs on users' vote choices remains unclear, the tools are often criticised. This is also the case for the Belgian VAA, which faced criticism for being too simplistic and unnuanced due to its binary configuration (Abts, Swyngedouw & Billiet, 2005; Cedroni & Garzia, 2010; Krouwel & Fiers, 2008; Swyngedouw & Goeminne, 2005; Van Camp, Lefevere & Walgrave, 2014; *see also* Krouwel, Vitiello & Wall, 2012 for a detailed discussion).

3 We also used a correspondence table using Pearson's Chi-square measure of association (*see* Table B in the Appendix). The results are significant for both regions and confirm the direction of the percentages: users tend not to follow the advice given by the VAA.

4 NB: The independent variable included in the logistic regression models is this one. It has not been recoded onto categories (as in Table A).

The authors would like to thank both anonymous reviewers for their thorough reviews and fruitful comments to further consolidate our article. They also would like to thank Jonas Lefevere for his advice and valuable comments. The usual disclaimer applies.